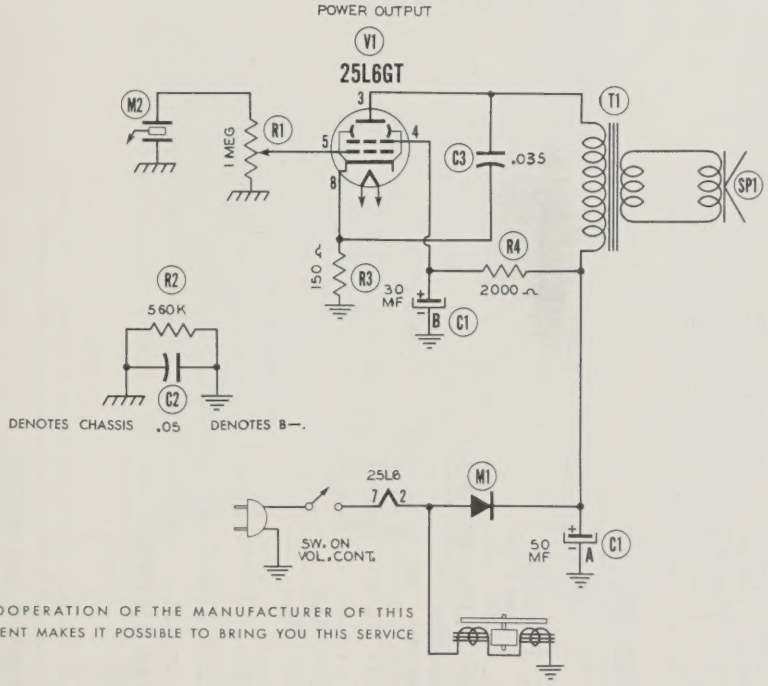
93

CONTENTS

TRADE NAME AND MODEL		SET AND FOLDER NO.
Aircastle	K1	93-1
Arvin	3160CM (Ch. TE-276) Tel. Rec.	93-2
Crosley	10-135, 10-136E, 10-137, 10-138, 10-139, 10-140	93-3
Dumont	RA-103D, RA-104A, RA-110A Tel. Rec.	93-4
Emerson	640 (Ch. 120112)	93-5
GMC	2233029	93-6
Motorola	12VK15 (Ch. TS-30, A), 16VF8, 16VK7 (Ch. TS-16, A) Tel. Rec.	93-7
Philco	50-1720, 50-1725	93-8
Rca Victor	T100 (Ch. KCS38), T120, T121 (Ch. KCS34C), TC124, TC125, TC127 (Ch. KCS34, B), 9T246 (Ch. KCS38), 9T256 (Ch. KCS38C), 9TC245 (Ch. KCS34B), 9TC247, 9TC249 (Ch. KCS34, B) Tel. Rec.	93-9
Tele-Tone	TV-284 (Ch. TT), TV-286 (Ch. TH or TJ), TV-287, TV-288 (Ch. TT) Tel. Rec.	93-10
Zenith	G2420E (Ch. 24G20), G2420-EOX (Ch. 24G20-OX), G2420R (Ch. 24G20), G2420-ROX (Ch. 24G20-OX), G2454 (Ch. 24G21), G2454-ROX (Ch. 24G21-OX) Tel. Rec.	93-11

AIRCASTLE MODEL K1

TRADE NAME Aircastle, Model K1
SUPPLIER Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois.
TYPE SET AC Operated Phono Player With One Tube Amplifier.
TUBES (ONE) Type 25L6GT Power Output
POWER SUPPLY 105-125 Volts AC **RATING** .29 Amp. @ 117 Volts AC



Pin No.	25L6GT Volt.	Res.
1	0V.	0Ω
2	100VAC	36Ω
3	110VDC	†160Ω
4	112VDC	†2KΩ
5	0V.	600KΩ
6	0V.	0Ω
7	117VAC	48Ω
8	7.3VDC	150Ω

† MEASURED FROM JUNCTION OF M1 AND R4.

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93-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	25L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	CE-402-0	PRSA150/50-30			TA-530	Filter-Red
B	30	150						Filter-Yellow
C2	.05	200	CP-105-2	P288-05			TM-15	Line Isolation
C3	.035	600	CP-103-5	P688-033			TM-13	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	VC-150-S	Q13-137	AM-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	*	Attach to R1A per instructions

* Switch is attached at factory.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	560KΩ	½	RC-500-5	BTS-560K	Isolation
R3	150Ω	½	RC-150-5	BW-½-150	Output Cathode
R4	200Ω	½	RC-200-5	BTS-2200	Filter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.5KΩ	3.1Ω	160Ω	.35Ω	TS-250-0	A-3332 #	A-3025 #	RO-2 #	# Bend mounting tabs down and remount on original bracket.

SPEAKER

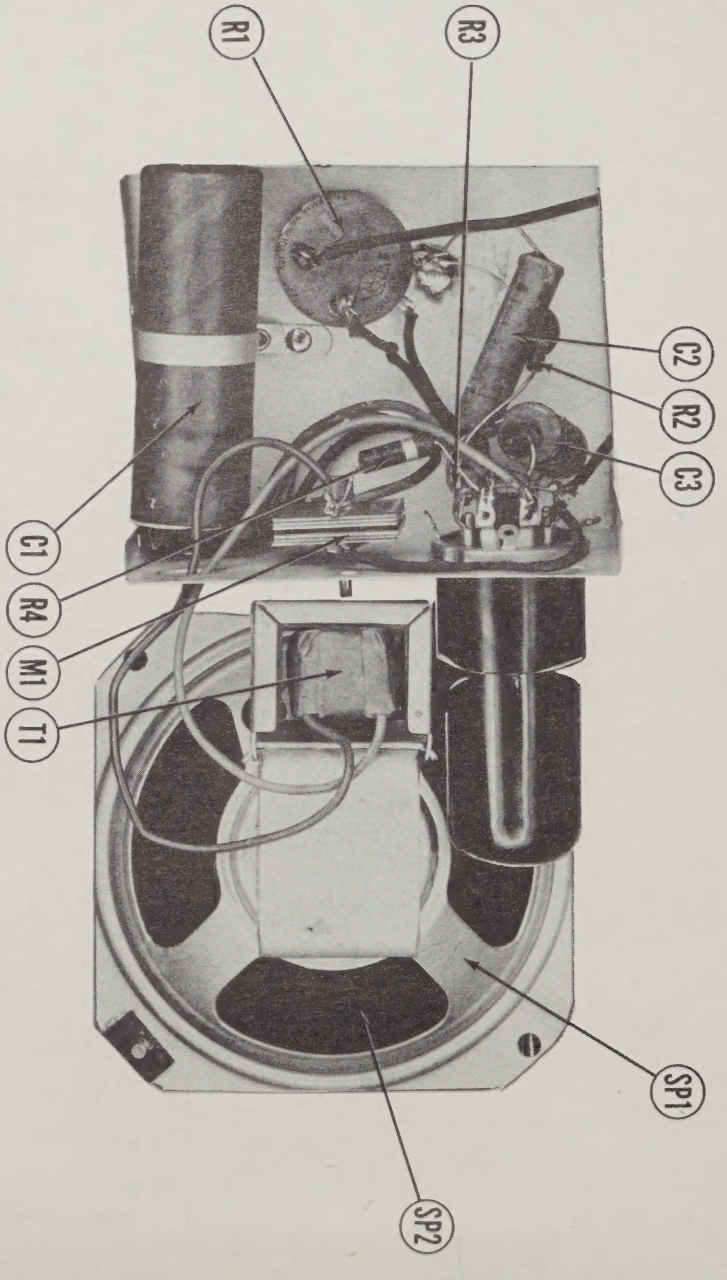
ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113		
SP1	PM	3.1Ω	SP-400	MOD. P4-X ①	4A07 ①	① Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: AIRCASTLE PART No.	SYLVANIA PART No.		NOTES
M1	.048A	SL-650-M	NB-5		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	REMARKS
M2A	CA-827	L-82-A	Optional	W56A	Optional	Cartridge and Needle
B		510-L-72 •		96A •		•Tone Arm Assembly



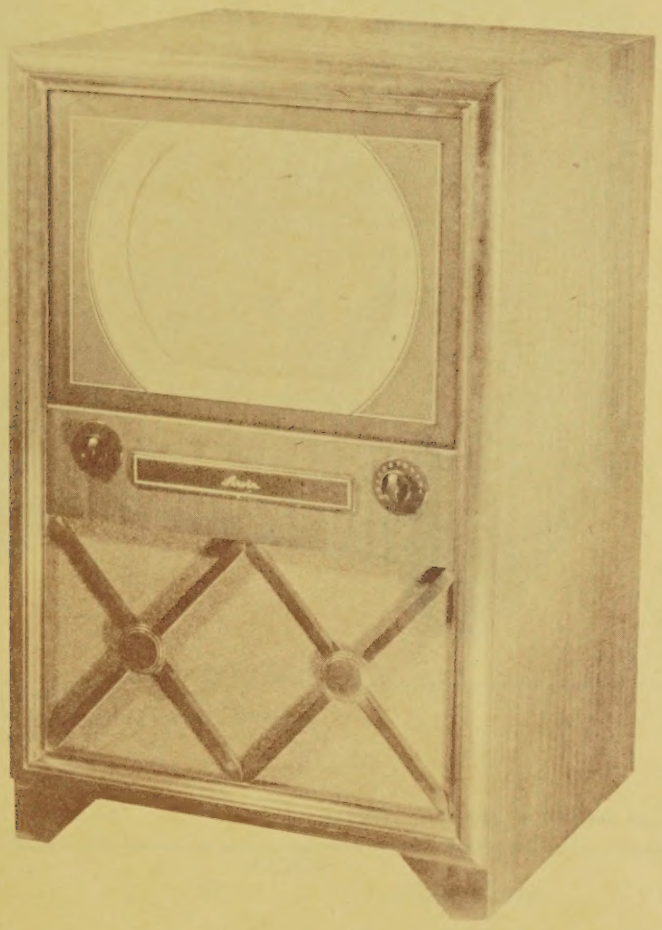
PHOTOFACT* Folder

ARVIN
MODEL 3160CM (Ch. TE-276)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



ARVIN
MODEL 3160CM (Ch. TE-276)

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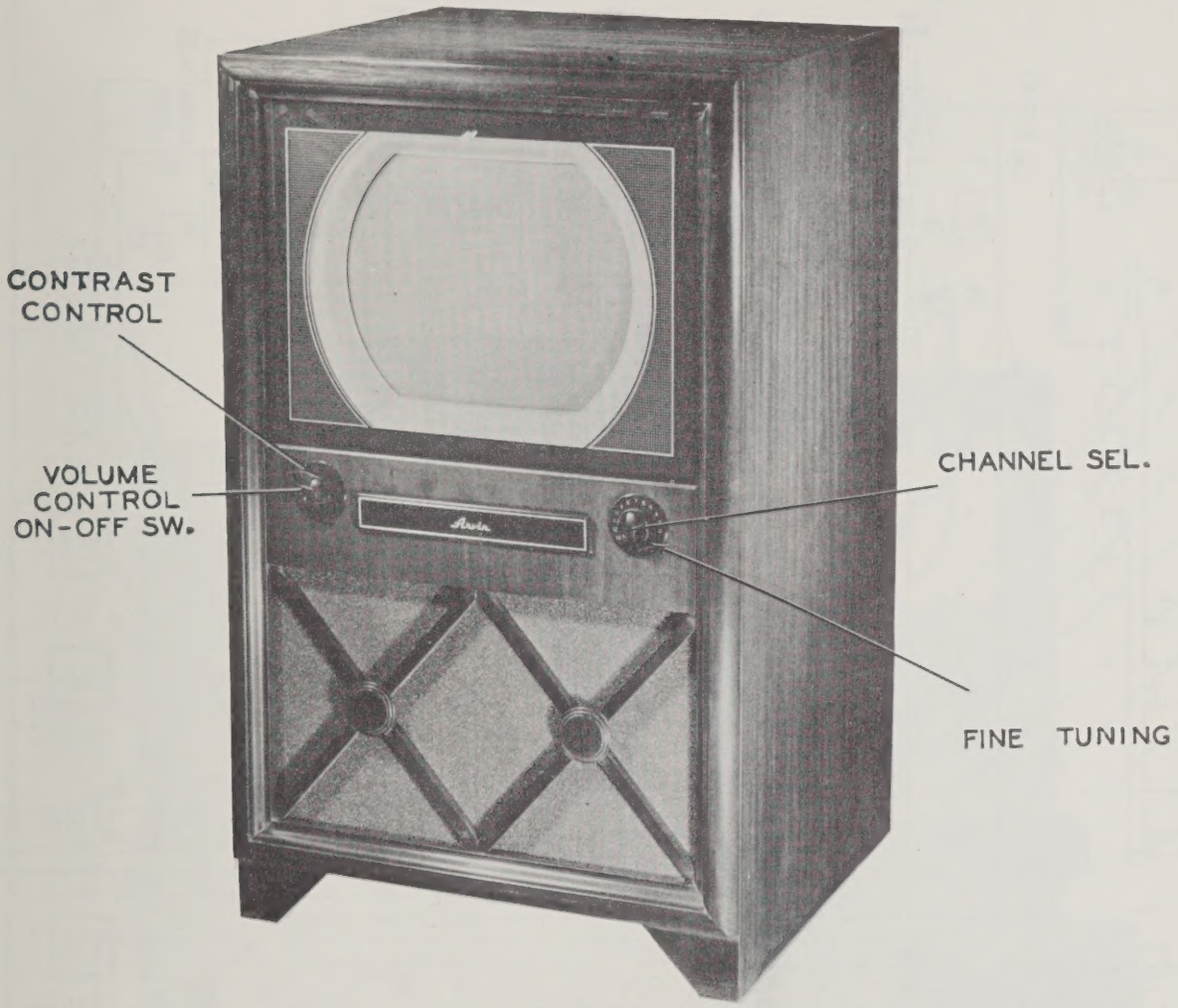
DATE 5–50 SET 93 FOLDER 2

ARVIN
MODEL 3160CM (Ch. TE-276)



ARVIN
MODEL 3160CM (Ch. TE-276)

ARVIN MODEL 3160CM

TRADE NAME	Arvin, Model 3160CM (Ch. TE-276)
MANUFACTURER	Noblitt-Sparks Industries, Columbus, Indiana
TYPE SET	Television Receiver
TUBES	Twenty Six
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.36 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

AGC Threshold Adjustment 20
Alignment Instructions 6, 7
Block Diagram 19
Critical Lead Dressing 19
Horizontal Sweep Circuit Adjustments 20
Parts List and Description 13, 14, 15, 16
Photographs
Cabinet-Rear View 16
Capacitor Identification 11, 18
Photographs (continued)
Chassis-Top View 3, 7
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

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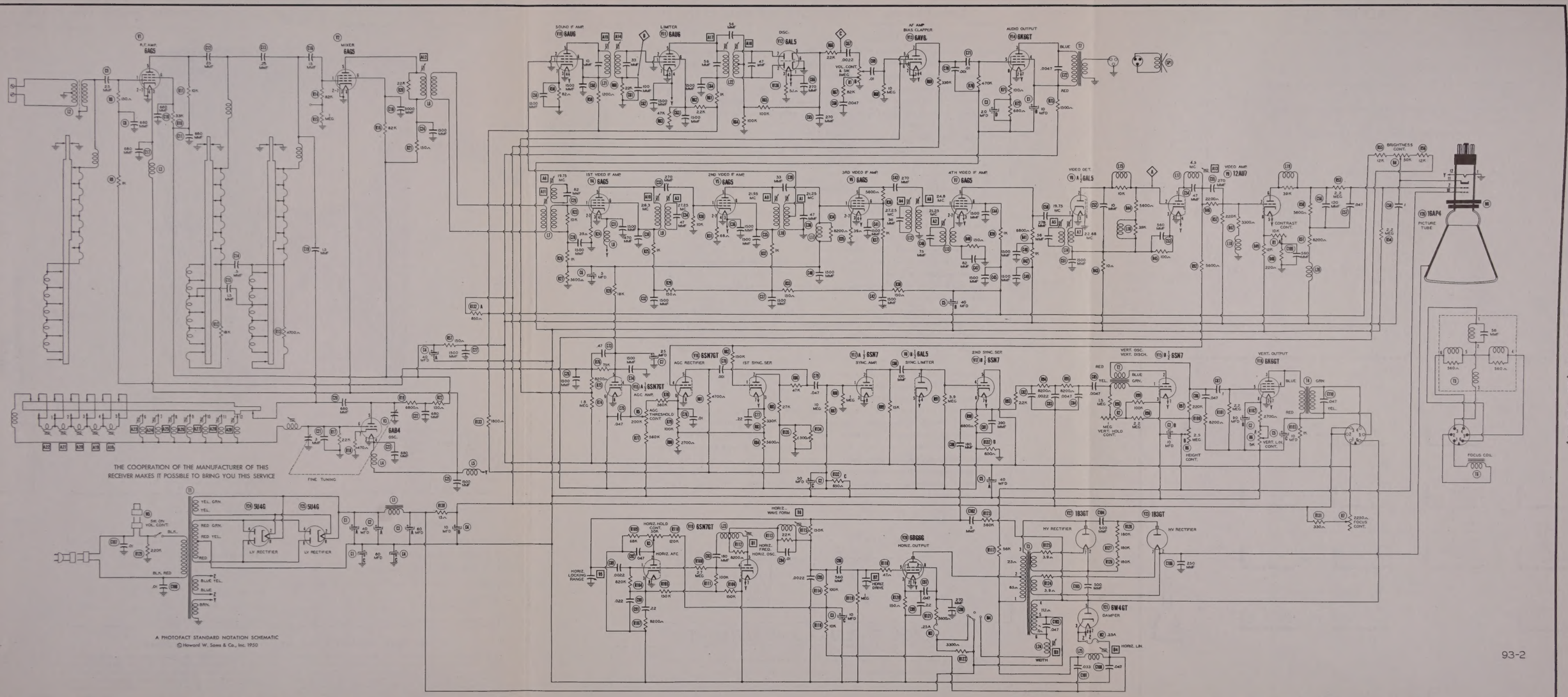
ARVIN
MODEL 3160CM (Ch. TE-276)
93-2
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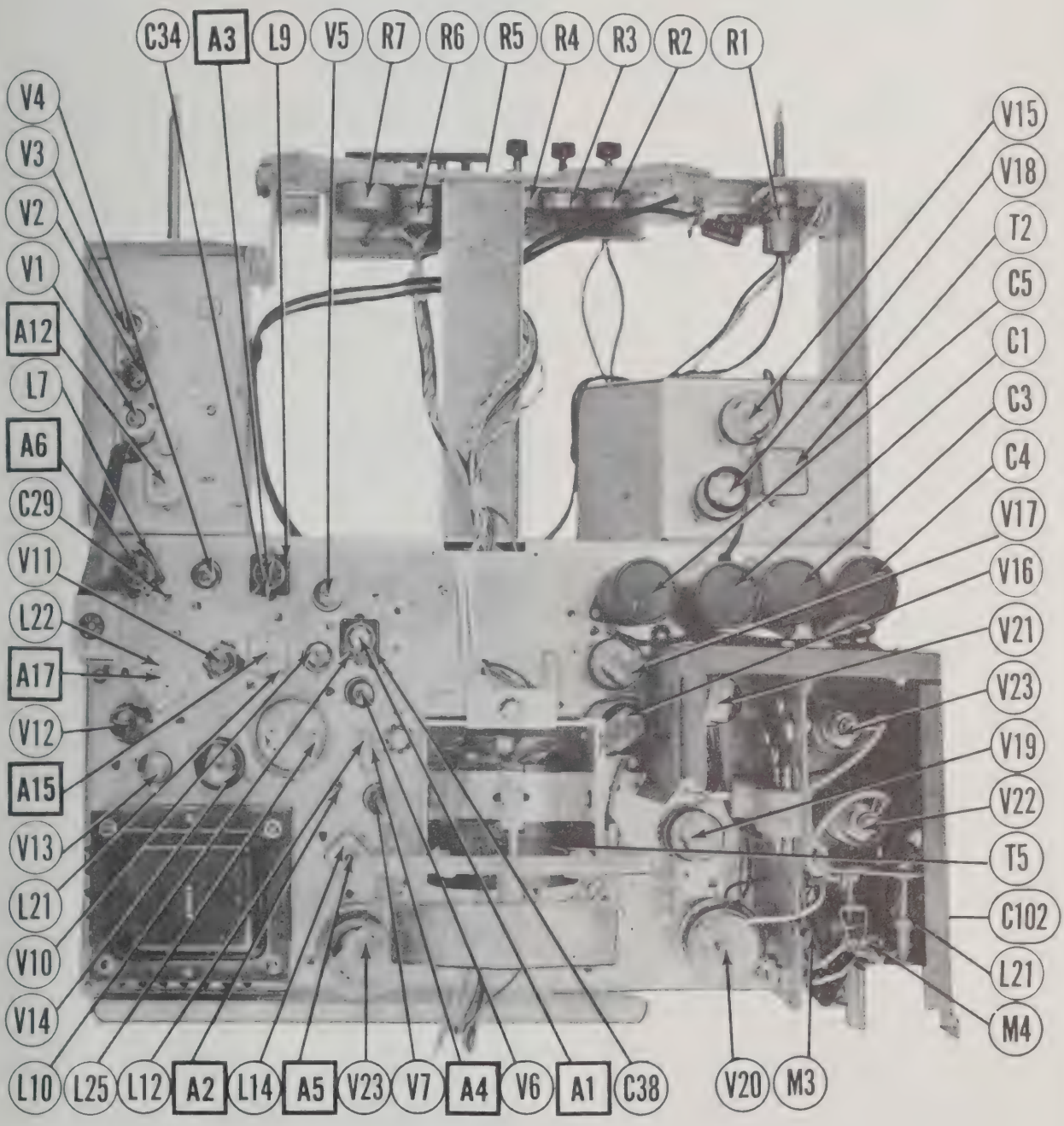
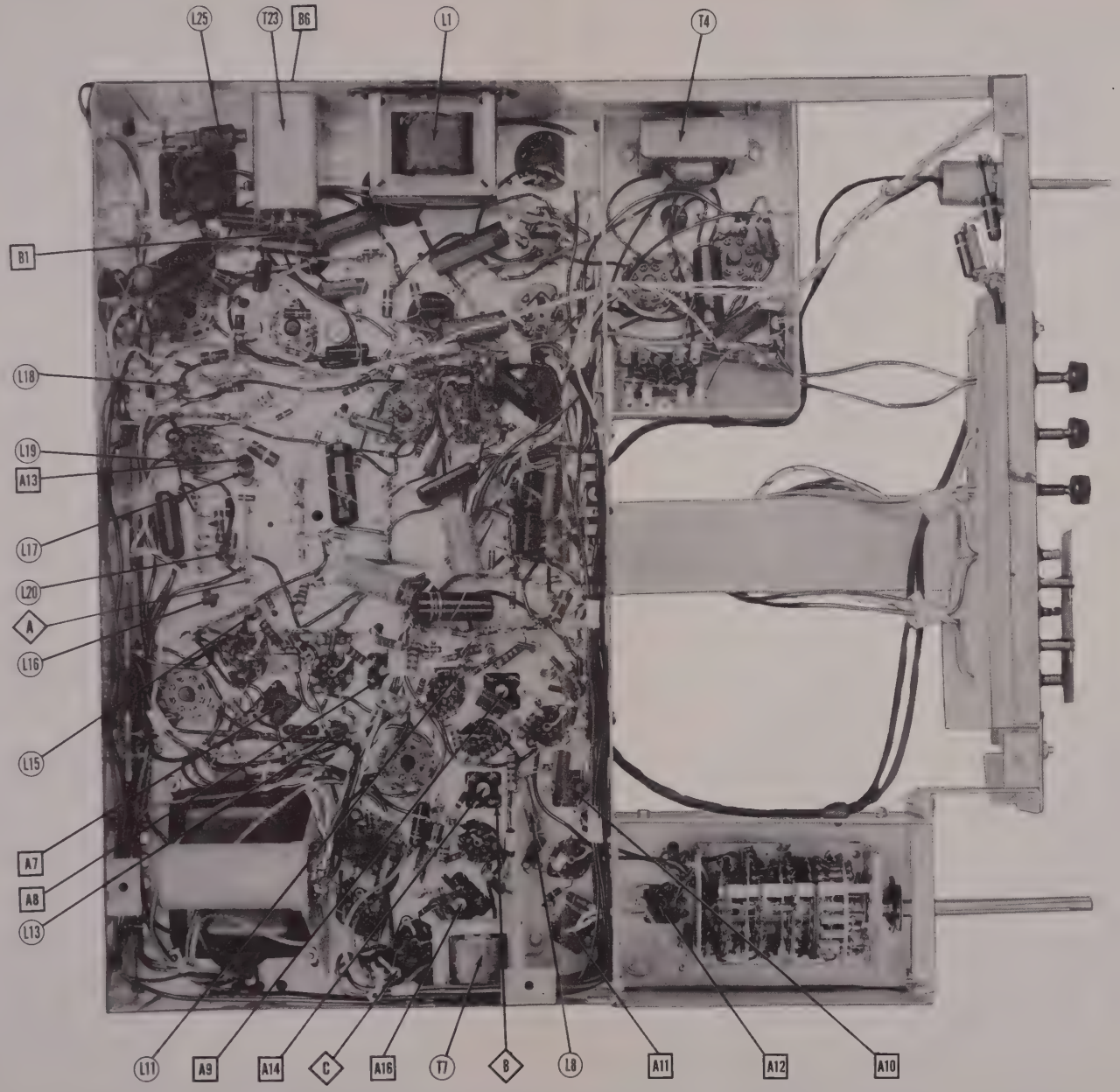
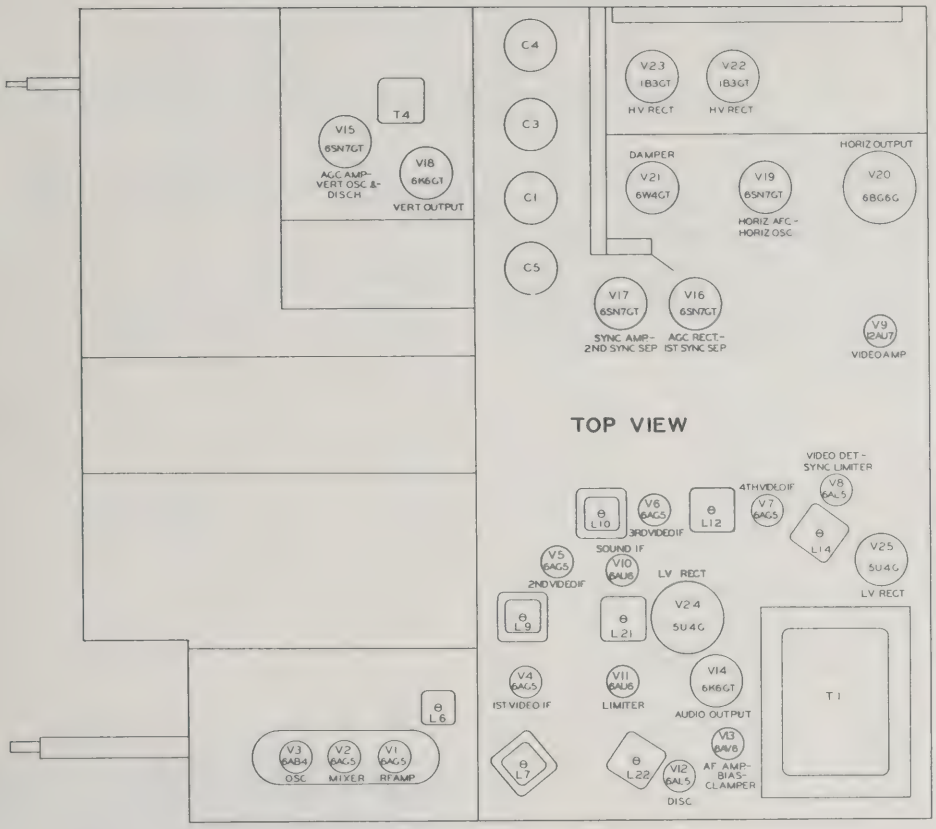
R.F. AMP 6AG5
MIXER 6AG5
OSC. 6AB4
FINE TUNING
SOUND I.F. AMP 6AU6
LIMITER 6AU6
DISC. 6AL5
A.F. AMP BIAS CLAMPER 6AV6
AUDIO OUTPUT 6K6GT
1ST VIDEO I.F. AMP 6AG5
2ND VIDEO I.F. AMP 6AG5
3RD VIDEO I.F. AMP 6AG5
4TH VIDEO I.F. AMP 6AG5
VIDEO DET. 6AL5
VIDEO AMP 12AU7
16AP4 PICTURE TUBE
AGC RECTIFIER 6SN7GT
AGC AMP. 6SN7GT
1ST SYNC. SER.
SYNC. AMP. 6SN7
SYNC. LIMITER 6AL5
2ND SYNC. SER. 6SN7
VERT. OSC. 6SN7
VERT. OUTPUT 6K6GT
HORIZ. OSC. 6SN7GT
HORIZ. OUTPUT 6BG6G
HV RECTIFIER 1B3GT
DAMPER 6W4GT
LV RECTIFIER 5U4G
LV RECTIFIER 5U4G
SW. ON VOL. CONT.
FOCUS COIL

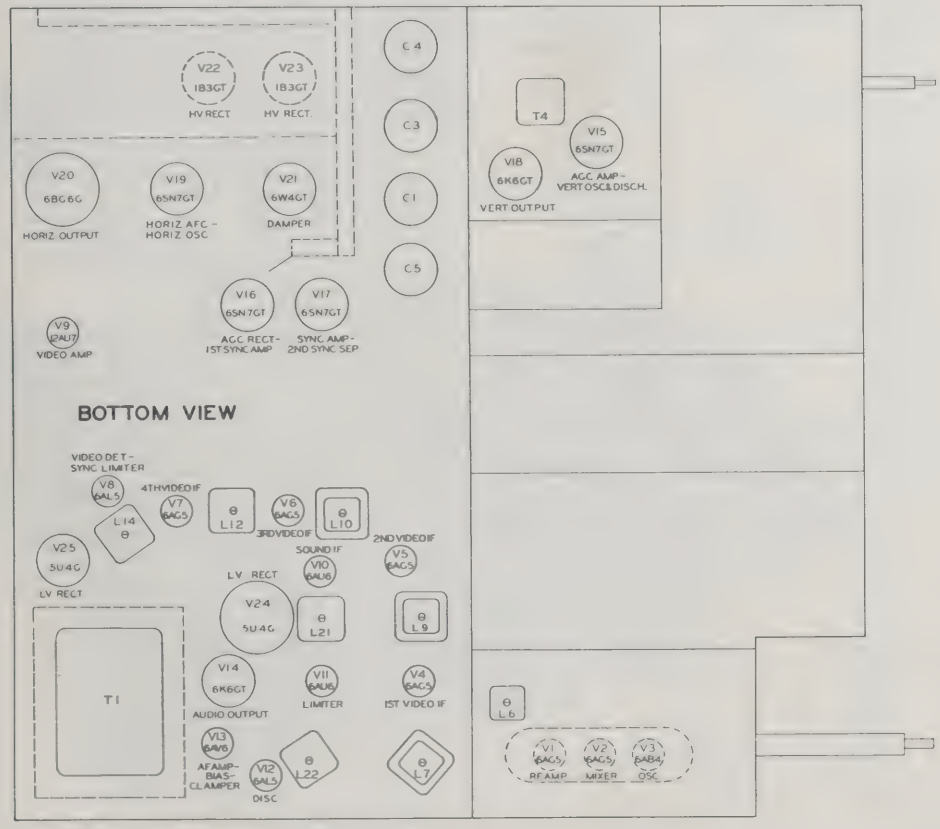


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

It is important that proper grounding of the receiver and sweep generator be accomplished before attempting alignment. If possible, place receiver and sweep generator on a metal plate, making sure the receiver chassis and sweep generator case are connected to the plate. If no metal plate is available, connect bonding strap between various points on the sweep generator case and the receiver chassis.

Proper grounding can be checked by touching the receiver chassis, the generator case, or the test leads. No change in meter reading or scope pattern should result.

If the set is to be aligned with the picture tube removed, tape the end of the high voltage lead and place it away from the receiver chassis.

VIDEO IF ALIGNMENT

Remove the local oscillator tube **V3**, to prevent erroneous indications.
Remove the AGC tube V15.
Connect a 250KΩ potentiometer between pins 5 and 6 of the AGC tube socket.
Adjust the potentiometer to read -4.5 volts on a **VTVM** connected between the junction of **R27** and R28 and chassis.
During video alignment, both leads of the **VTVM** are connected to a point 120 volts negative with respect to the receiver chassis. **DO NOT** ground or touch the VTVM case during video alignment.
A sweep generator and oscilloscope must be used to align A11 and A12 (Step 8).
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
For set 8 only, adjust the 250KΩ bias potentiometer to read -2 volts between the junction of R27 and R28, and chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	21.25MC (Unmod.)	Any	Across R44	A1, A2	Adjust for MINIMUM deflection.
2.	Direct	"	27.25MC (Unmod.)	"	"	A3, A4	"
3.	Direct	"	19.75MC (Unmod.)	"	"	A5, A6	"
4.	Direct	"	22.65MC (Unmod.)	"	"	A7	Adjust for maximum deflection.
5.	Direct	"	24.8MC (Unmod.)	"	"	A8	"
6.	Direct	"	21.95MC (Unmod.)	"	"	A9	"
7.	Direct	"	26.3MC (Unmod.)	"	"	A10	"

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	25MC (10MC SWP)	22.2MC 24.5MC	Any	Vert. Amp. thru 33KΩ to Point (A). Low side to chassis.	A11, A12	Connect a 330Ω carbon resistor across the primary of each video IF transformer. (A7 thru A10). Adjust A11 and A12 for response curve similar to Fig 1 with markers as shown. Remove the 330Ω resistors.

OVERALL VIDEO IF RESPONSE CHECK

Leave sweep generator and oscilloscope connected as in step 8 of Video IF Alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	25MC (10MC SWP)	21.25MC 22.1MC 25MC 25.75MC	Any	Vert. Amp. thru 33KΩ to Point (A). Low side to chassis.		Check for response curve similar to Fig 2 with markers as shown. If necessary retouch A7 thru A12 for optimum response. A serious dip in the response curve may be caused by a defective video detector tube V8.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.01MFD	High side to Point (A). Low side to chassis.	Not used	4.5MC (400 ∿ Mod.)	Any	Vert. Amp. to Pin 2 (Grid) of picture tube (V26). Low side to chassis.	A13	Adjust for MINIMUM 400 ∿ response on scope.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	21.25MC (1MC SWP)	21.25MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A14, A15	Adjust for maximum amplitude and symmetry as per Fig 3.
12.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A16, A17	Adjust A16 so 21.25MC marker occurs at center of crossover lines as per Fig 4. Adjust A17 for maximum amplitude and straightness of crossover lines.

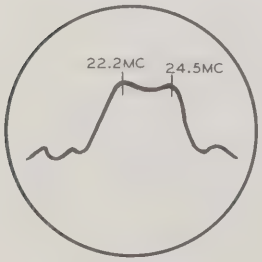


FIG. 1

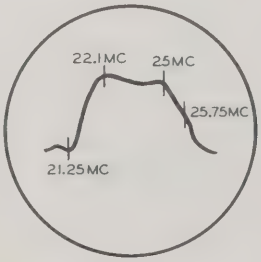


FIG. 2

FIG. 3

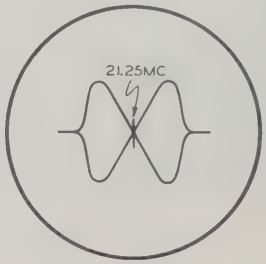


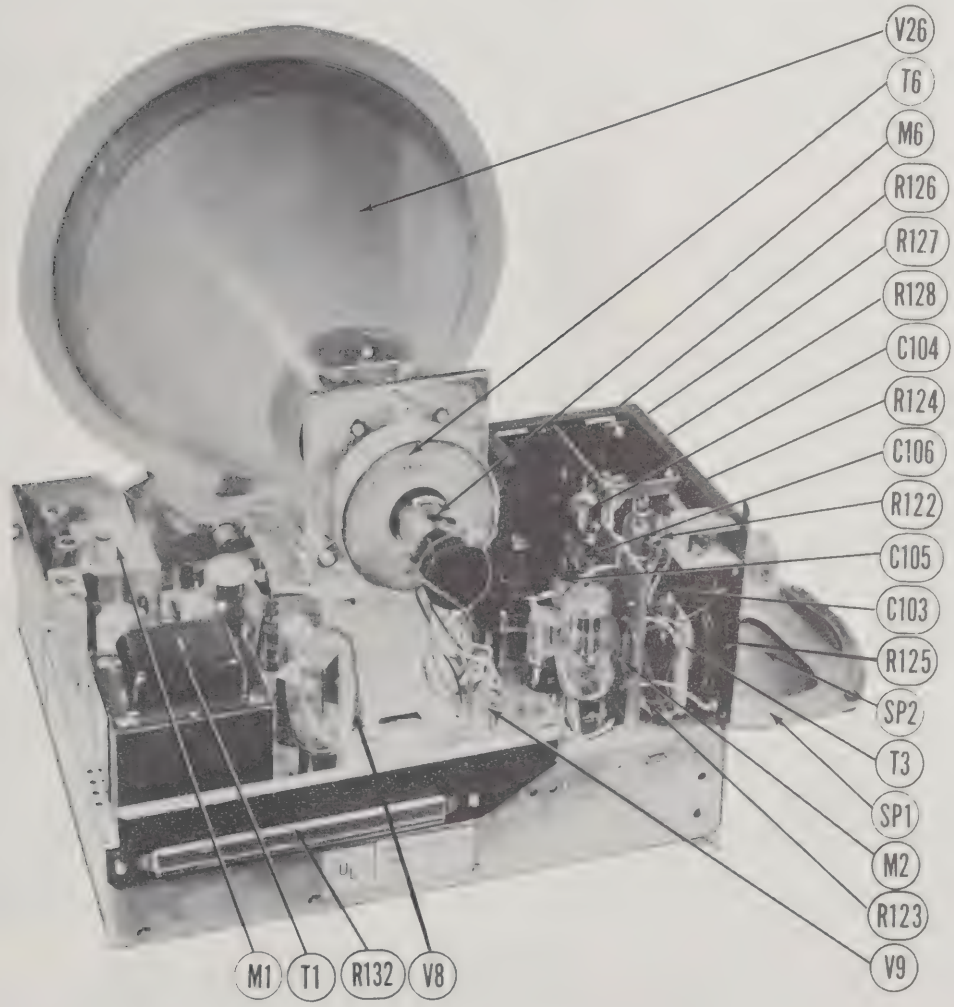
FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

The oscillator adjustment screws are reached from the front of the tuner through the numbered holes around the channel switch. Slight adjustment of any oscillator screw will not effect the other channels. If any oscillator screw is far out of adjustment, recheck all channels.
Do not turn any screw more than 7 turns from tight.
Set the fine tuning control to the center of its range.
The sound IF system must be properly aligned before attempting oscillator alignment.
If the adjustment screw does not have sufficient range on any high band channel, the oscillator coil can be compressed or expanded to adjust the inductance of the coil. Use extreme care when making adjustments in this manner.
The RF and mixer lines are pre-set at the factory and do not normally require adjustment in the field.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	Direct	Across antenna terminals.	87.75MC (Unmod.)	6	DC Probe to Point C . Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	Direct	"	81.75MC	5	"	A19	"
15.	Direct	"	71.75MC	4	"	A20	"
16.	Direct	"	65.75MC	3	"	A21	"
17.	Direct	"	59.75MC	2	"	A22	"
18.	Direct	"	179.75MC	7	"	A23	"
19.	Direct	"	185.75MC	8	"	A24	"
20.	Direct	"	191.75MC	9	"	A25	"
21.	Direct	"	197.75MC	10	"	A26	"
22.	Direct	"	203.75MC	11	"	A27	"
23.	Direct	"	209.75MC	12	"	A28	"
24.	Direct	"	215.75MC	13	"	A29	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Recheck channels 13 thru 2, in that order. Touch up any channel that the oscillator is off frequency.



CHASSIS-TOP VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	.3VDC	0V.	6.3VAC	0V.	225VDC	215VDC	0V.		
V 2	6AG5	-1VDC	0V.	0V.	6.3VAC	225VDC	105VDC	0V.		
V 3	6AB4	165VDC	0V.	0V.	6.3VAC	165VDC	§-2.4VDC	1.3VDC		
V 4	6AG5	-4.6VDC	.6VDC	0V.	6.3VAC	105VDC	105VDC	.6VDC		
V 5	6AG5	0V.	.7VDC	6.3VAC	0V.	110VDC	110VDC	.7VDC		
V 6	6AG5	0V.	.5VDC	0V.	6.3VAC	50VDC	110VDC	.5VDC		
V 7	6AG5	0V.	1.3VDC	6.3VAC	0V.	122VDC	127VDC	1.3VDC		
V 8	6AL5	0V.	◓-.8VDC	0V.	6.3VAC	◓0V.	0V.	▲-.2VDC		
V 9	12AU7	▲100VDC	▲-5.1VDC	▲.8VDC	6.3VAC	6.3VAC	▲235VDC	▲115VDC	▲120VDC	0V.
V 10	6AU6	0V.	0V.	0V.	6.3VAC	120VDC	120VDC	.8VDC		
V 11	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	68VDC	0V.		
V 12	6AL5	0V.	-.2VDC	1.2VAC	6.3VAC	0V.	0V.	-.1VDC		
V 13	6AV6	-.6VDC	0V.	0V.	6.3VAC	.1VDC	.1VDC	85VDC		
V 14	6K6GT	▲20VDC	0V.	▲290VDC	▲300VDC	▲0V.	260VDC	6.3VAC	▲24VDC	
V 15	6SN7GT	▲-120VDC	▲90VDC ▲380VDC	▲0V.	◓-2VDC	◓62VDC	◓0V.	6.3VAC	0V.	
V 16	6SN7GT	◓24VDC	85VDC	◓36VDC	◓27VDC	◓150VDC	◓38VDC	6.3VAC	0V.	
V 17	6SN7GT	-1VDC	150VDC	0V.	◓-3.3VDC	◓270VDC	◓0V.	6.3VAC	0V.	
V 18	6K6GT	0V.	0V.	▲320VDC	▲320VDC	▲0V.	▲0V. ▲37VDC	6.3VAC	▲37VDC ▲52VDC	
V 19	6SN7GT	▲-3.5VDC	▲105VDC	▲-24VDC	▲-55VDC	▲215VDC	▲0V.	6.3VAC	0V.	
V 20	6BG6G	▲400VDC	0V.	▲18VDC	0V.	▲.1VDC	▲18VDC	6.3VAC	▲310VDC	TOP CAP *
V 21	6W4GT	0V.	0V.	380VDC	0V.	260VDC	0V.	380VDC	380VDC	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	1B3GT	* DO NOT MEASURE.								
V 24	5U4G	0V.	265VDC	0V.	370VAC	0V.	370VAC	0V.	265VDC	
V 25	5U4G	0V.	265VDC	0V.	370VAC	0V.	370VAC	0V.	265VDC	
V 26	16AP4	0V.	-2.4VDC	PIN 10 320VDC	PIN 11 92VDC	PIN 12 6.3VAC				

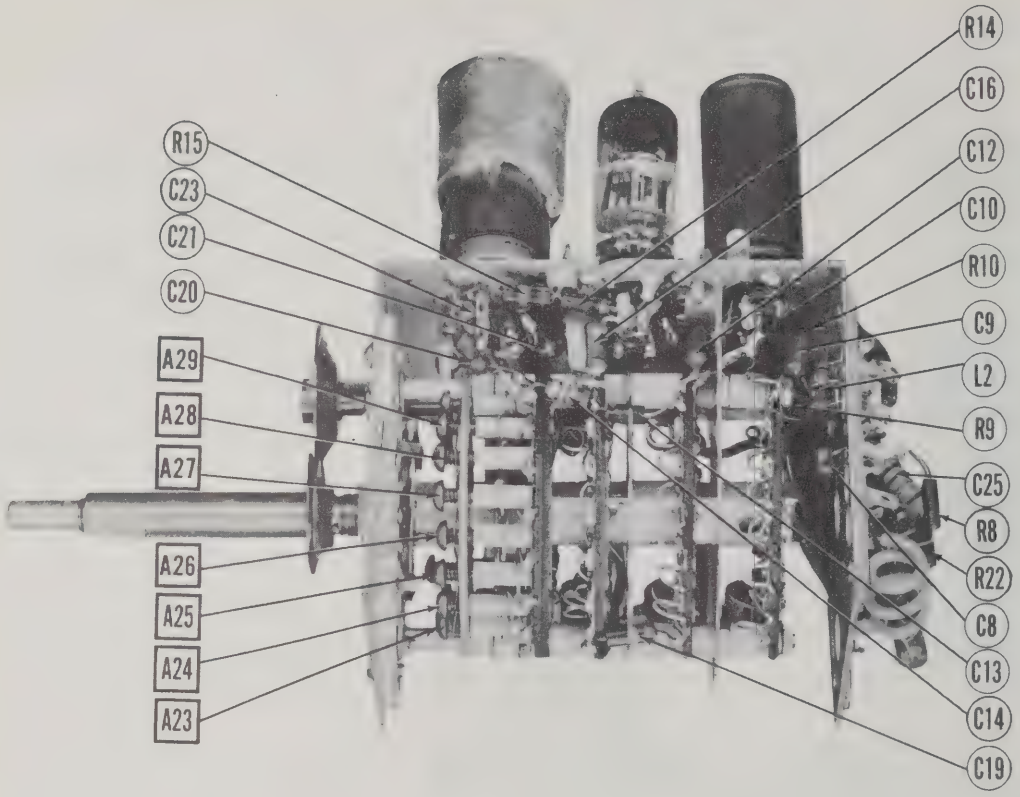
§ TAKEN WITH VACUUM TUBE VOLTMETER.
▲ MEASURED FROM PIN 6 OF V19.
◓ MEASURED FROM PIN 6 OF V15.

RESISTANCE READINGS

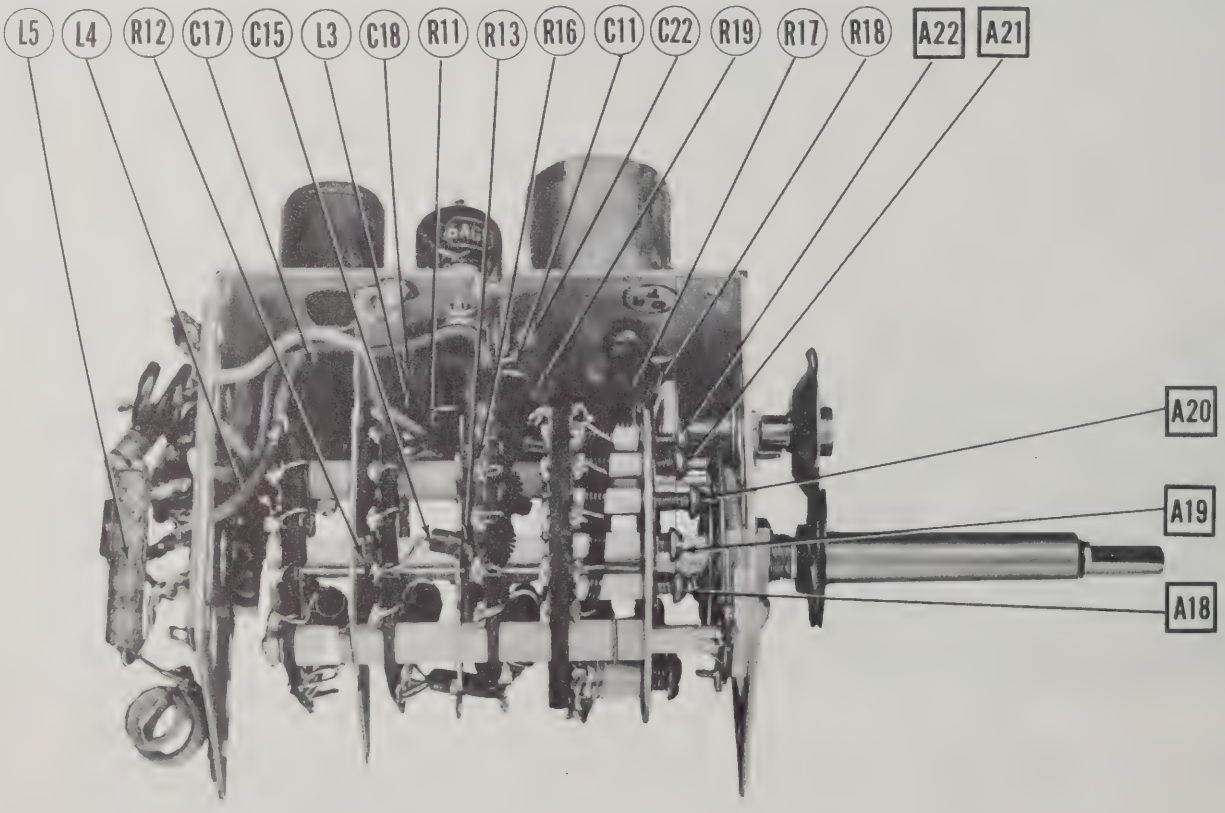
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	100KΩ	0Ω	.1Ω	0Ω	†10KΩ	†33KΩ	0Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.1Ω	†600Ω	†82KΩ	0Ω		
V 3	6AB4	†9KΩ	Inf.	0Ω	.1Ω	†9KΩ	22KΩ	470Ω		
V 4	6AG5	6.5KΩ	39Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	39Ω		
V 5	6AG5	10KΩ	68Ω	.1Ω	0Ω	†2.4KΩ	†2.4KΩ	68Ω		
V 6	6AG5	5.6KΩ	39Ω	0Ω	.1Ω	†7.8KΩ	†2.3KΩ	39Ω		
V 7	6AG5	.1Ω	150Ω	.1Ω	0Ω	†8KΩ	†2.1KΩ	150Ω		
V 8	6AL5	▲10Ω	◓3.9Meg.	0Ω	.1Ω	◓0Ω	0Ω	▲5.6KΩ		
V 9	12AU7	5.5KΩ	▲5.6KΩ	▲110Ω	.1Ω	.1Ω	†14KΩ	3.3KΩ	▲7KΩ	0Ω
V 10	6AU6	.1Ω	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	82Ω		
V 11	6AU6	22KΩ	0Ω	0Ω	.1Ω	†2.2KΩ	†18KΩ	0Ω		
V 12	6AL5	0Ω	100KΩ	2.5Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	0Ω	.1Ω	100KΩ	100KΩ	†330KΩ		
V 14	6K6GT	▲780Ω	0Ω	†2.2KΩ	†1.8KΩ	▲470KΩ	†55Ω	.1Ω	▲680Ω	
V 15	6SN7GT	▲2.5 Meg.	¶1.5Meg. ¶270KΩ	▲0Ω	▲340KΩ ▲320KΩ	23KΩ	◓0Ω	.1Ω	0Ω	
V 16	6SN7GT	150KΩ	†30KΩ	330KΩ	12KΩ	†7.5KΩ	100KΩ	.1Ω	0Ω	
V 17	6SN7GT	1 Meg.	†15KΩ	0Ω	◓3.9Meg.	†330Ω	◓6.8KΩ	.1Ω	0Ω	
V 18	6K6GT	Inf.	0Ω	†2.5KΩ	†2.5KΩ	▲2.2Meg.	▲5KΩ ▲8Ω	.1Ω	▲7.7KΩ ▲2.7KΩ	
V 19	6SN7GT	▲900KΩ	¶180KΩ	▲300KΩ	▲250KΩ	¶110KΩ	▲0Ω	.1Ω	0Ω	
V 20	6BG6G	†55Ω	0Ω	▲150Ω	Inf.	▲1 Meg.	▲150Ω	.1Ω	†9KΩ †5.6KΩ	TOP CAP ¶130Ω
V 21	6W4GT	Inf.	Inf.	180KΩ	Inf.	†55Ω	Inf.	180KΩ	180KΩ	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ¶260Ω
V 23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V 24	5U4G	Inf.	6KΩ	Inf.	▲18Ω	Inf.	▲17Ω	Inf.	6KΩ	
V 25	5U4G	Inf.	6KΩ	Inf.	▲18Ω	Inf.	▲17Ω	Inf.	6KΩ	
V 26	16AP4	0Ω	▲1.2Meg.	PIN 10 ¶56KΩ	PIN 11 †12KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V24.
¶ MEASURED FROM PIN 3 OF V21.
▲ MEASURED FROM PIN 6 OF V19.
◓ MEASURED FROM PIN 6 OF V15.

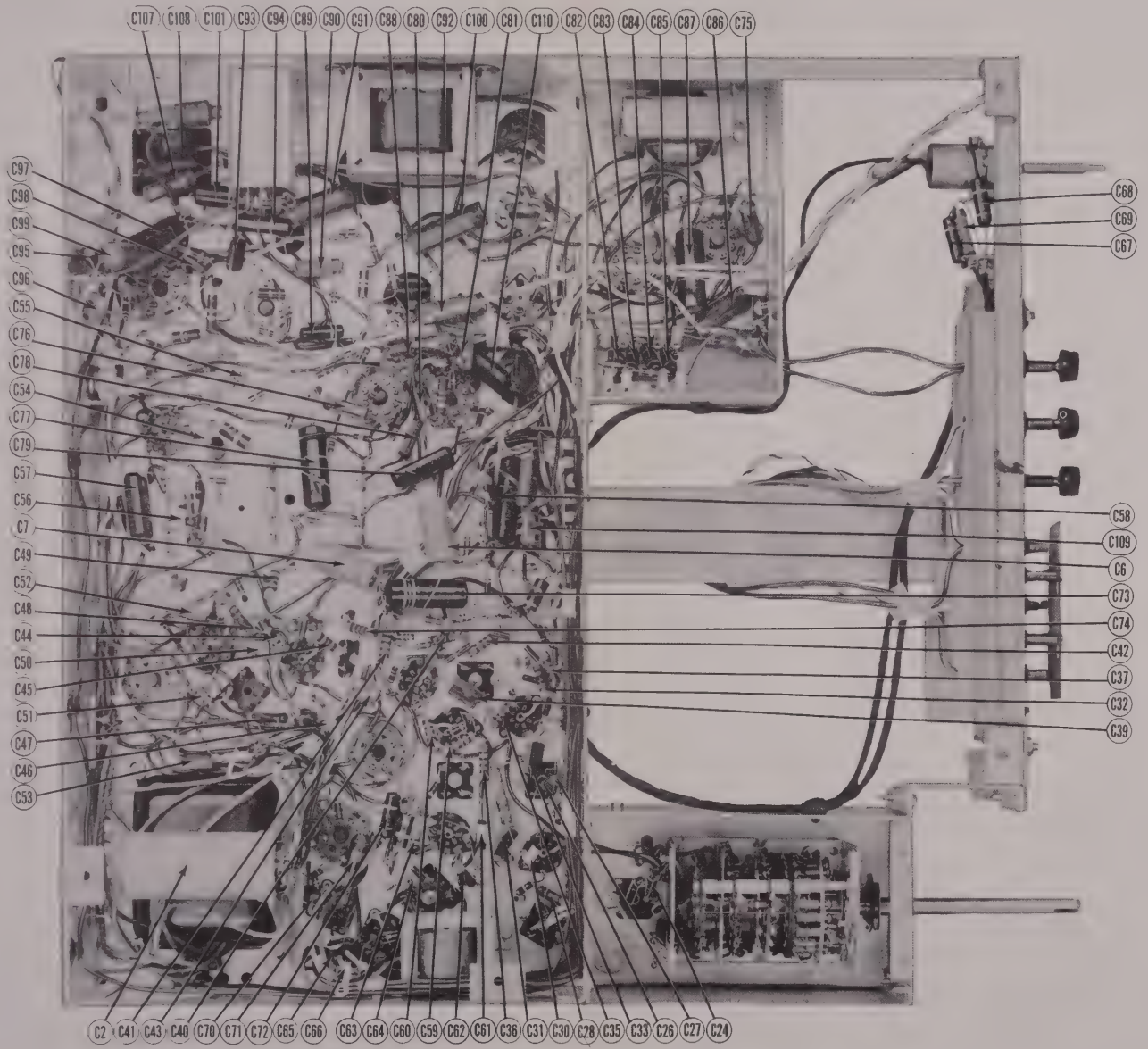
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



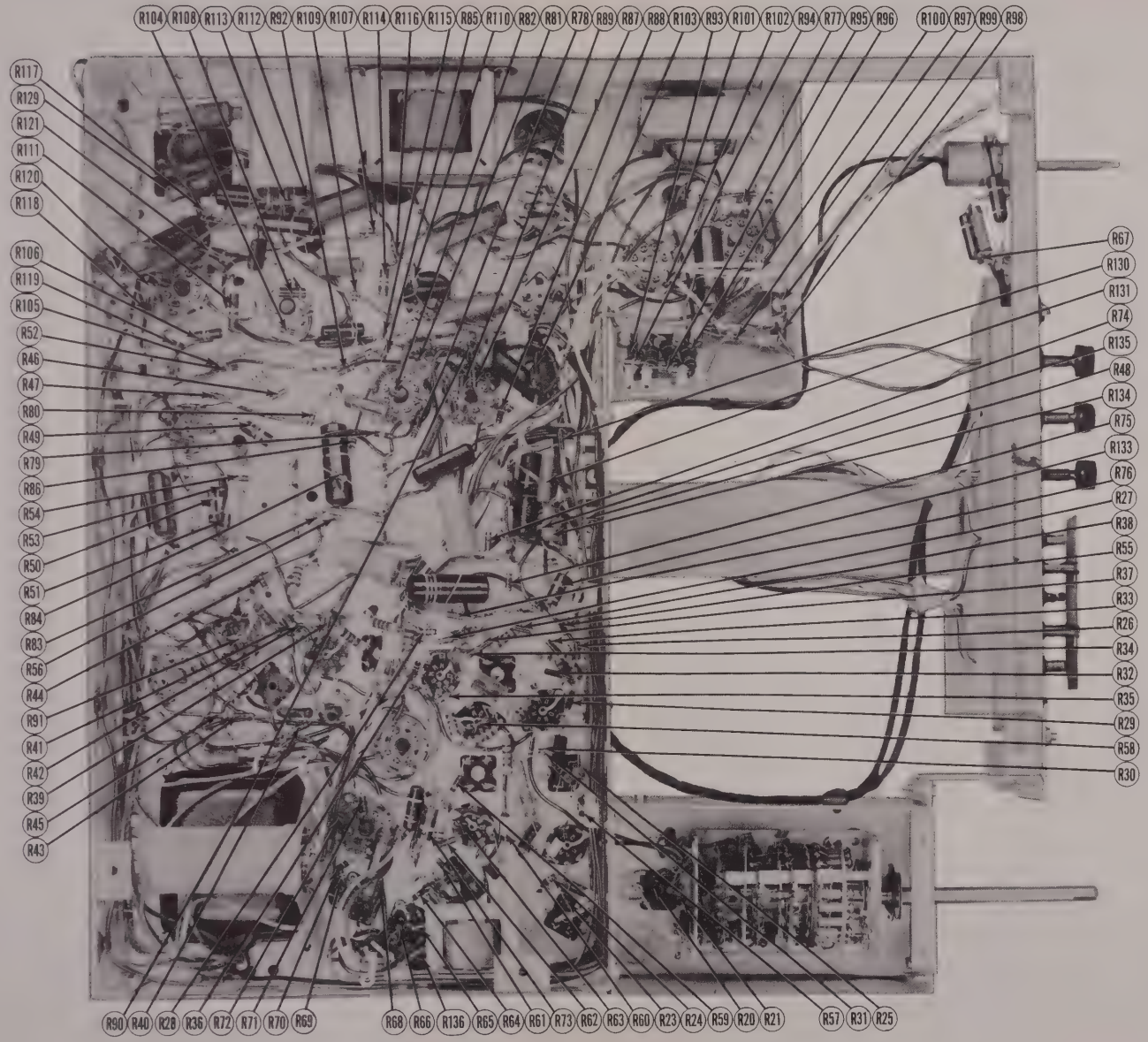
RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		ARVIN PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3A	Oscillator	6AB4	6AB4	5CE	
B	Oscillator	6C4	6C4	6BG	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6AG5	6AG5	7BD	
V7	4th Video IF Amp.	6AG5	6AG5	7BD	
V8	Video Detector - Sync Limiter	6AL5	6AL5	6BT	
V9	Video Amplifier	12AU7	12AU7	9A	
V10	Sound IF Amplifier	6AU6	6AU6	7BK	
V11	Limiter	6AU6	6AU6	7BK	
V12	Discriminator	6AL5	6AL5	6BT	
V13	AF Amplifier - Bias Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6K6GT	6K6GT	7S	
V15	AGC Amp. - Vert. Osc. - Vert. Disch.	6SN7GT	6SN7GT	8BD	
V16	AGC Rect. - 1st Sync Separator	6SN7GT	6SN7GT	8BD	
V17	Sync Amplifier -2nd Sync Separator	6SN7GT	6SN7GT	8BD	
V18	Vertical Output	6K6GT	6K6GT	7S	
V19	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V20	Horizontal Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	HV Rectifier	1B3GT	1B3GT	3C	
V24	LV Rectifier	5U4G	5U4G	5T	
V25	LV Rectifier	5U4G	5U4G	5T	
V26	Picture Tube	16AP4	16AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	C22422-3	AFH82J16E			TVL-25	▲ Filter
B	10	450						■ Output Decoupling
C	80	200						▲ Filter
C2A	40	450	C22422-4	AFH8J1810D			TVL-27	▲ Filter
B	90	150						■ Vert. Output Cath. Bypass
C	50	150						▲ Filter
C3A	60	450	C22422-1	AFH1222J4D			TVL-68	▲ Filter
B	10	450						■ Decoupling
C	10	450						▲ Decoupling
D	20	150						Output Cathode Bypass
C4A	40	450	C22422-3	AFH82J16E			TVL-25	▲ Decoupling
B	10	450						■ Filter
C	80	200						▲ Filter
C5A	40	450	C22422-2	AFH882J			TVL-30	▲ Filter
B	40	450						■ Filter
C	10	450						▲ Vert. Output Decoupling
C6	5	50	A22416	PRS50/10			TVA-13	AGC Filter
C7	25	50	A22417	PRS50/25			TVA-15	AGC Filter
C8	680			GP680M	D6-681	GP2K-680		AGC Filter
C9	25			GP25M	D6-250	GP1K-25		RF Coupling
C10	680			GP680M	D6-681	GP2K-680		RF Screen Bypass
C11	680			GP680M	D6-681	GP2K-680		RF Bypass
C12	25			GP25M	D6-250	GP1K-25		RF Coupling
C13	.25							RF Coupling
C14	.5				D2-.5			RF Coupling
C15	1.5			C11.5CNPO	D2-1.5	NPOK-1.5		RF Coupling
C16	15			GP15K	D6-150	GP1K-15		RF Coupling
C17	680			GP680M	D6-681	GP2K-680		RF Filament Bypass
C18	5000			BPD-5	D6-502	811-005	29C1	Mixer Screen Bypass
C19	1.5			C11.5CNPO	D2-1.5	NPOK-1.5		Ostillator Coupling
C20	680			GP680M	D6-681	GP2K-680		Oscillator Feedback
C21	3			CN3CN150		N150K-3		Fixed Trimmer
C22	680			GP680M	D6-681	GP2K-680		Oscillator Decoupling
C23	680			GP680M	D6-681	GP2K-680		Oscillator Filament Bypass
C24	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	Mixer Plate Decoupling
C25	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	Filament Bypass
C26	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C27	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C28	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C29	82			CN82JNPO	D2-82	NPOL-82		Fixed Trimmer
C30	470			GP470M	D6-471	GP2K-470	1FM-35	1st Video IF Decoupling *
C31	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	1st Video IF Filament Bypass
C32	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C33	270	1000	A22411	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C34	47			CN47JNPO	D2-47	NPOM-50	MS-45	Fixed Trimmer
C35	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	2nd Video IF Decoupling
C36	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	2nd Video IF Filament Bypass
C37	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C38	47			CN47JNPO	D2-47	NPOM-50	MS-45	Fixed Trimmer
C39	33	1000	A22410	1468-00004	D6-330	GP1K-33	1FM-44	IF Coupling
C40	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C41	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	3rd Video IF Decoupling
C42	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C43	270	1000	A22411	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C44	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	4th Video IF Screen Bypass
C45	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C46	75			CN75JNPO	D2-75	NPOM-75		Fixed Trimmer
C47	82		C22702	GP100K	D2-82	GP1K-100	1FM-31	4th Video IF Cathode Bypass
C48	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	4th Video IF Plate Decoupling
C49	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C50	270	1000	A22411	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA ARVIN PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C52	10	500	C20290-100	1468-00001	D6-100	GP1k-10	MS-41	Video Diode Filter
C53	560	500	C20290-561	1468-00005	D6-561	GP2K-560	1FM-35	1st Video Amp. Cathode Bypass
C54	47			CN47ZNPO	D2-47	N90M-50	MS-45	Fixed Trimmer
C55	270		C20301-271	GP270M	D6-271	GP2K-270	1FM-325	Peaking
C56	120		C20301-121	GP120M	D6-121	GP2K-120	1FM-315	Video Coupling
C57	.047	400	C20292-473	P488-047			TM-15	Video Coupling
C58	.1	600	C20295-104	P688-1			TM-1	Picture Tube Cathode Decoupling
C59	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	1st Sound IF Cathode Bypass
C60	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	1st Sound IF Decoupling
C61	100		C20300-101	GP100M	D6-101	GP1K-101	1FM-31	Limiter Grid Filter
C62	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Filament Bypass
C63	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Screen Bypass
C64	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Plate Decoupling
C65	270		C20301-271	GP270M	D6-271	GP2K-270	1FM-325	RF Bypass
C66	270		C20301-271	GP270M	D6-271	GP2K-270	1FM-325	Discriminator Filament Bypass
C67	.0022	600	C20295-222	P688-0022	D6-222	GP2M-002	TM-22	Audio Coupling
C68	.0047	600	C20295-472	P688-0047	D6-472	811-005	TM-25	Tone Compensation
C69	.01	400	C20292-103	P488-01	D6-103	821-01	TM-11	Audio Coupling
C70	.001	600	C20295-102	P688-001	D6-102	GP2L-001	TM-21	De-emphasis
C71	.01	1000	C20296-103	P1088-01	D6-103	821-01	MB-11	Audio Coupling
C72	.0047	600	C20295-472	P688-0047	D6-472	811-005	TM-25	Output Plate Bypass
C73	47	200	C20291-474	P288-47			TC-5	AGC Filter
C74	1500		C20300-152	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C75	.047	200	C20291-473	P288-047			TM-15	AGC Filter
C76	.01	400	C20292-103	P488-01	D6-103	821-01	TM-11	AGC Rect. Cathode Bypass
C77	22	200	C20291-224	P488-22			TC-2	1st Sync Sep. Cath. Bypass
C78	.001	600	C20295-102	P688-001	D6-102	GP2L-001	TM-21	Sync Coupling
C79	.047	400	C20292-473	P488-047			TM-15	Sync Coupling
C80	10	500	C20290-100	1468-0001	D6-101	GP1K-100	1FM-31	Sync Coupling
C81	390	500	C20290-391	1468-0004	D6-391	GP2K-390	1FM-34	2nd Sync Sep. Cath. Bypass
C82	.0022	600	C20295-222	P688-0022	D6-222	GP2M-002	TM-22	Integrator Network
C83	.0047	600	C20295-472	P688-0047	D6-472	811-005	TM-25	Integrator Network
C84	.0047	600	C20295-472	P688-0047	D6-472	811-005	TM-25	Integrator Network
C85	.0047	600	C20295-472	P688-0047	D6-472	811-005	TM-25	Vert. Sync Coupling
C86	.047	600	C20295-473	P688-047			TM-15	Vert. Discharge
C87	.1	600	C20295-104	P688-1			TM-1	Vert. Sweep Coupling
C88	180	500	C20290-181	1468-0002	D6-181	GP2K-180	1FM-32	Horiz. Sync Coupling
C89	.0022	600	C20295-222	P688-0022	D6-222	GP2M-002	TM-22	Horiz. Sync Coupling
C90	.022	400	C20292-223	P488-022			TM-12	AFC Filter
C91	.22	400	C20292-224	P488-22			TC-3	AFC Filter
C92	.047	600	C20295-473	P688-047			TM-15	Horiz. AFC Plate Bypass
C93	180	1000	A22412					Horiz. Oscillator Grid Cap.
C94	.01	600	C20294-103	P688-01			TM-11	Fixed Trimmer
C95	.0022	600	C20295-222	P688-0022	D6-222	GP2M-002	TM-22	Horiz. Discharge
C96	560	500	C20290-561	1468-0005	D6-561	GP2K-560	1FM-35	Horiz. Sweep Coupling
C97	.047	1000	C20296-473	P1088-047			TR-15	Horiz. Output Screen Bypass
C98	220	1000	A22411					Horiz. Output Screen Bypass
C99	.22	400	C20292-224	P488-22			TC-2	Horiz. Output Cath. Bypass
C100	.047	1000	C20296-473	P1088-047			TR-15	Damper Filter
C101	.033	1000	C20296-333	P1088-033				Damper Filter
C102	5	1500	A22403					Horiz. Sweep Feedback
C103	.47	200	C20291-473	P288-047			TM-15	Fixed Trimmer
C104	500	20000	A22496		TV1-502	410-500		Voltage Doubler Capacitor
C105	500	20000	A22496		TV1-502	410-500		HV Filter
C106	250	20000						HV Filter
C107	.1	600	C20295-103	P688-01	D6-103	821-01	TM-11	Line Filter
C108	.01	600	C20295-103	P688-01	D6-103	821-01	TM-11	Line Filter
C109	560	500	C20290-561	1468-0005	D6-561	GP2K-560	1FM-35	2nd Video Amp. Cath. Bypass
C110	.047	200	C20291-473	P288-047			TM-15	Fixed Trimmer

* Some models use 1500MMF in this application.

CONTROLS

ITEM No	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	IRC PART No	CLAROSTAT PART No	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg.	½		B1/2-116*			Contrast Control - Panel
B	1 Meg.	½		Bi3-137K *			Volume Control - Tapped @ 200KΩ - Rear
C	Shaft-End Switch		D22464-1	E-187*	D23464-1		Attach per instructions in "Concentrikit".
D				76-1*			Attach per instructions in "Concentrikit".
R2A	1 Meg.	½	D22464-8	QU-137	AM-61-S		Vert. Hold Control - See note.
B	Shaft-End Switch		Not Req.	Not Req.	KSS-3		Attach to R2A per instructions.
R3A	50KΩ	½	D22464-3	QU-123	AM-44-S	N-227	Horiz. Hold Control
B	Shaft-End Switch		Not Req.	Not Req.	KSS-3	K-185	Attach tp R3A per instructions.
R4A	50KΩ	½	D22464-3	QU-123	AM-44-S	N-227	Brightness Control
B	Shaft-End Switch		Not Req.	Not Req.	KSS-3	K-185	Attach to R4A per instructions.
R5	200KΩ	½	D22464-5		M-52-S		AGC Threshold Control
R6A	5000Ω	½	D22464-6				Vert. Linearity Control - Panel
B	2.5 Meg.	½					Height Control - Rear
R7	2500Ω	4	D22464-7		10-2500		Focus Control - Wire Wound

* Additional parts to be used with "Concentrikit".
Note: Some models use 1 Meg. control - Part No. D22464-2.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ±10% UNLESS OTHERWISE STATED
R8	470Ω 20%	½			AGC Network
R9	4700Ω 20%	½		BTS-1000	AGC Network
R10	33KΩ 20%	½		BTS-33K	RF Screen
R11	10KΩ	1		BTA-10K	RF Plate
R12	18KΩ	½		BTS-18K	RF Plate Coil Shunt
R13	4700Ω	½			Mixer Grid Coil Shunt
R14	82KΩ 20%	½		BTS-82K	Mixer Grid
R15	1 Meg. 20%	½		BTS-1 Meg.	Mixer Grid
R16	82KΩ 20%	½		BTS-82K	Mixer Screen
R17	22KΩ 20%	½			Oscillator Grid
R18	4700 20%	½		BTS-470	Oscillator Cathode
R19	6800Ω 20%	1			Oscillator Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
R20	22KΩ 5%	½			Mixer Plate Transformer Shunt
R21	150Ω 20%	½			Mixer Plate Decoupling
R22	150Ω 20%	½			Decoupling Network
R23	10KΩ 5%	½	C22382-103		1st Video IF Trans. Shunt
R24	39Ω	½	C22381-390		Peaking
R25	1000Ω 20%	½	C20061-102	BTS-1000	1st Video IF Cathode
R26	1000Ω 20%	½	C20061-102	BTS-1000	1st Video IF Decoupling
R27	5600Ω 5%	½	C22382-562	BTS-5600-5%	AGC Network
R28	18KΩ 5%	½	C22382-183	BTS-18K - 5%	AGC Network
R29	150Ω 20%	½	C20061-151		Decoupling Network
R30	10KΩ 5%	½	C22382-103		2nd Video IF Grid
R31	68Ω	½	C22381-680		2nd Video IF Cathode
R32	1000Ω 20%	½	C20061-102	BTS-1000	2nd Video IF Decoupling
R33	150Ω 20%	½	C20061-151		Decoupling Network
R34	8200Ω 5%	½	C22382-822		Peaking Coil Shunt
R35	39Ω	½	C22381-390		3rd Video IF Cathode
R36	5600Ω 5%	½	C22382-562		3rd Video IF Plate
R37	1000Ω 20%	½	C20061-102	BTS-1000	3rd Video IF Decoupling
R38	150Ω 20%	½	C20061-151		Decoupling Network
R39	1000Ω 20%	½	C20061-102	BTS-1000	4th Video IF Screen Decoupling
R40	150Ω	½	C22381-151		4th Video IF Cathode
R41	6800Ω 5%	1	C22383-682		4th Video IF Plate
R42	1000Ω 20%	½	C20061-102	BTS-1000	4th Video IF Plate Decoupling
R43	10Ω 20%	½	C20061-100		Bias Network
R44	5600Ω 5%	½	C22382-562	BTS-5600-5%	Video Det. Diode Load
R45	100Ω	½	C22381-101		Video Amp. Cathode
R46	2200Ω	½	C22381-222	BTS-2200	Video Amp. Plate
R47	3300Ω 5%	½	C22382-332	BTS-3300-5%	Video Amp. Plate
R48	220Ω	½	C22381-221		Voltage Divider
R49	12KΩ	2	C20302-123	BT-2-12K	Video Amp. Cathode
R50	5600Ω	1	C20070-562	BTA-5600	Video Amp. Plate
R51	8200Ω 5%	1	C22383-822	BTA-8200-5%	Video Amp. Plate
R52	220KΩ	½	C22381-224	BTS-220K	Voltage Divider
R53	2.2Meg.	½	C22381-225	BTS-2.2Meg.	Voltage Divider
R54	2.2 Meg.	½	C22381-225	BTS-2.2Meg.	Picture Tube Grid
R55	12KΩ	½	C22381-123	BTS-12K	Voltage Divider
R56	12KΩ	½	C22381-123	BTS-12K	Voltage Divider
R57	150Ω 20%	½	C20061-151		Decoupling
R58	82Ω	½	C22381-820		Sound IF Cathode
R59	1200Ω	½	C22381-122	BTS-1200	Sound IF Decoupling
R60	82KΩ	½	C22381-223		Limiter Grid
R61	1000Ω 20%	½	C20061-102	BTS-1000	Limiter Plate Decoupling
R62	22KΩ 20%	½	C20061-223		Limiter Screen
R63	47KΩ 20%	½	C20061-473	BTS-47K	Voltage Divider
R64	100KΩ 5%	½	C22382-104	BTS-100K-5%	Discriminator Diode Load
R65	100KΩ 5%	½	C22382-104	BTS-100K-5%	Discriminator Diode Load
R66	22KΩ 20%	½	C20061-223	BTS-22K	De-emphasis
R67	82KΩ	½	C22381-823	BTS-82K	Tone Compensation
R68	10 Meg. 20%	½	C20061-106	BTS-10 Meg.	AF Amp. Grid
R69	330KΩ	½	C22381-334	BTS-330K	AF Amp. Plate
R70	470KΩ 20%	½	C20061-474	BTS-470K	Output Grid
R71	100Ω	½	C22381-101	BW-½-100	Output Cathode
R72	680Ω	1	C20070-681	BTA-680	Output Cathode
R73	1500Ω	2	C20302-152	BT-2-1500	Output Decoupling
R74	1.8Meg. 5%	½	C22382-185	BTS-1.8Meg 5%	AGC Network
R75	8200Ω 5%	½	C22382-822	BTS-8200-5%	AGC Network
R76	75KΩ - 5%	½	GZ382-754		AGC Network - See note 1.
R77	560KΩ	½	C22381-564	BTS-560K	AGC Amp. Grid - See note 3.
R78	560KΩ	½	C22381-564	BTS-560K	Voltage Divider
R79	100KΩ	½	C22381-104	BTS-100K	AGC Rect. Cathode
R80	2700Ω	½	C22381-272	BTS-2700	AGC Rect. Cathode
R81	4700Ω	½	C22381-472	BTS-4700	AGC Rect. Plate
R82	150KΩ 20%	½	C20061-154	BTS-150K	1st Sync Separator Grid
R83	330KΩ	½	C22381-334	BTS-330K	1st Sync Separator Cathode
R84	5600Ω	½	C22381-562	BTS-5600	1st Sync Separator Cathode
R85	27KΩ	½	C22381-273	BTS-27K	1st Sync Separator Plate
R86	47KΩ	½	C22381-473	BTS-47K	Phase Shifter
R87	10 Meg.	½	C22381-106	BTS-10 Meg.	Voltage Divider
R88	1 Meg.	½	C22381-105	BTS-1 Meg	Sync Amp Grid
R89	15KΩ	1	C20070 -153	BTA-15K	Sync Amp Plate
R90	6800Ω	½	C22381-682	BTS-6800	2nd Sync Separator Cathode
R91	3.9 Meg.	½	C22381-395	BTS-3.9Meg.	2nd Sync Separator Grid
R92	5600Ω	½	C22381-562	BTS-5600	Isolation
R93	22KΩ	½	C22381-223	BTS-22K	Integrator Network
R94	8200Ω	½	C22381-822	BTS-822	Integrator Network
R95	8200Ω	½	C22381-822	BTS-8200	Integrator Network
R96	1.5 Meg. 5%	½	C22382-155	BTS-1.5Meg.	Vert. Oscillator Grid
R97	220KΩ	½	C22381-224	BTS-220K	Vert. Oscillator Plate
R98	2.2Meg.	½	C22381-225	BTS-2.2Meg.	Voltage Divider
R99	100KΩ	½	C22381-104	BTS-100K	Voltage Divider
R100	8200Ω 5%	½	C22382-822	BTS-8200-5%	Vert. Peaking
R101	2.2Meg.	½	C22381-225	BTS-2.2Meg.	Vert. Output Grid
R102	27000	½	C22381-272	BTS-2700	Vert. Output Cathode
R103	1000Ω 20%	½	C20061-102	BTS-1000	Vert. Output Decoupling
R104	820KΩ 5%	½	C22382-824	BTS-820K-5%	Horiz. AFC Grid
R105	150KΩ	½	C22381-154	BTS-150K	Horiz. AFC Cathode
R106	150KΩ 5%	1	C22383-154	BTA-150K-5%	Horiz. AFC Cathode
R107	8200Ω	½	C22381-822	BTS-8200	Horiz. AFC Filter Network
R108	2.7Meg. 5%	1	C22383-275	BTA-2.7Meg.5%	Voltage Divider
R109	68KΩ	½	C22381-683	BTS-68K	Voltage Divider
R110	120KΩ	1	C20070-124	BTA-120K	Voltage Divider
R111	100KΩ 5%	1	C22382-104	BTA-100K-5%	Horiz. Oscillator Grid
R112	8200Ω 5%	½	C22382-822	BTS-8200-5%	Horiz. Oscillator Trans. Shunt
R113	22KΩ	½	C22381-223	BTS-22K	Horiz. Oscillator Trans. Shunt
R114	100KΩ	1	C20070-104	BTA-100K	Horiz. Oscillator Plate - See note 1.
R115	150KΩ	½	C22381-154	BTS-150K	Horiz. AFC Filter Network
R116	10KΩ	½	C22381-103	BTS-10K	Filter
R117	56KΩ	½	C22381-563	BTS-56K	Filter
R118	47Ω 20%	½	C20061-470		Parasitic Suppressor
R119	1 Meg.	½	C22381-105	BTS-1 Meg.	Horiz. Output Grid
R120	150Ω	2	C20302-151	BW-2-150	Horiz. Output Cathode
R121	5600Ω	1	C20070-562	BTA-5600	Horiz. Output Screen
R122	3300Ω 5%	½	C22382-332	BTS-3300-5%	Horiz. Output Screen
R123	560KΩ	½	C22381-564	BTS-560K	Feedback

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARVIN PART No.	IRC PART No.	IDENTIFICATION CODES
R124	3.9Ω	½	C20308-39		HV Rect. Filament - Wire Wound - See note 2.
R125	3.9Ω	½	C20308-39		HV Rect. Filament - Wire Wound - See note 2.
R126	180KΩ	2			HV Rect. Load
R127	180KΩ	2			HV Rect. Load
R128	180KΩ	2			HV Rect. Load
R129	220KΩ	½	C22381-224	BTS-220K	Line Filter
R130	15Ω 20%	½	C20061-150	BW-½-15	Filter Network - See note 4.
R131	330Ω	2	C20309-331	BW-2-330	Focus Coil Shunt - Wire Wound
R132A	850Ω	12	C22499		Filter - Wire Wound
B	650Ω	6			Bias Network - Wire Wound
C	650Ω	6			Bias Network - Wire Wound
R133	1800Ω	2	C20302-182	BT-2-1800	Voltage Divider
R134	6800Ω	2	C20302-682	BT-2-6800	Bleeder
R135	6800Ω	2	C20302-682	BT-2-6800	Bleeder
R136	5.1Ω	½	C20308-51		Discriminator Filament - Wire Wound

Note 1 - Some models use 120KΩ resistor in this application.
Note 2 - Some models use 3.3Ω resistor in this application.
Note 3 - Some models use 470KΩ resistor in this application.
Note 4 - Some models use 10Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.
T1	117VAC @ 2.36A.	700VCT @ .28ADC	5VAC @ 6A.	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 8.3A.	E22807	P-8156 ①	P-3067 ③	TP-405

① Drill new mounting holes and rewire 6.3Volt filaments as required.
③ Connect two 5 Volt - 3 Ampere secondaries in parallel for 5 Volt - 6 Ampere.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	165Ω	131Ω	C-22446	A-8121 ②	A-4000 ②	TBO-2	Vert. Block. Osc. Trans.
T3	110Ω Tapped @ 85Ω	SEC. 1 11.8Ω Tapped @ .7Ω Sec. 2 & 3 0Ω		A-8119	HVO-5	TFB-4	Horiz. Output Trans.
T4	1000Ω Tapped @ 12Ω		C-22905	A-8112	A-3037	TSO-5	Vert. Output Trans.
T5A	13Ω		C-22575	DY-1	MD-3		Horiz. Deflection Coil
B	64Ω						Vert. Deflection Coil
T6	470Ω		C-22853		MF-2		Focus Coil

② Drill one new mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ARVIN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.8KΩ	3.4Ω	360Ω	.3Ω	C-22497-1	A-3849	A-3019	RO-13 ②	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	PM	3.4Ω	D-22791	10J12	10A31	
	CONE DIA.	V. C. DIA.				
SP2	9 3/8"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ARVIN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	.280A.	48Ω	1.5 Henries	C-22561-1	C-2326 ②	C-2991 ②	TR-3300 ②	② Drill one new mounting hole.

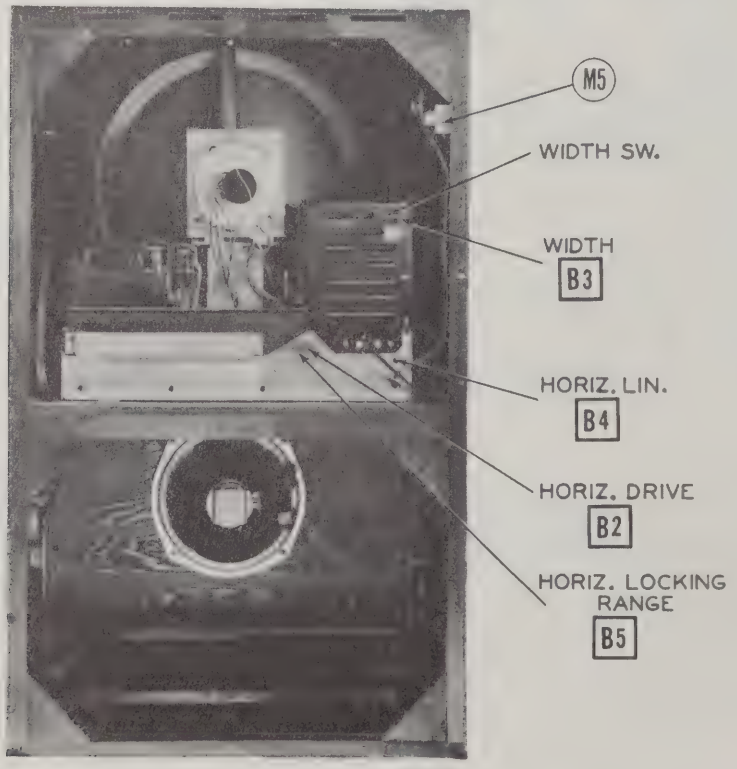
PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
L2	Ant. Input	0Ω				Part of tuner.
L3	Fil. Choke	0Ω				Part of tuner.
L4	Fil. Choke	0Ω				Part of tuner.
L5	Fil. Choke	0Ω				Part of tuner.
L6	Mixer Plate	.3Ω	.1Ω	C22398		
L7	1st Video IF	.1Ω	.1Ω	C22498		
L8	Fil. Choke	.1Ω		A22456		
L9	2nd Video IF	.2Ω		C22502		
L10	3rd Video IF & Sound Take-Off	.2Ω	.1Ω	C22555		
L11	Peaking	2.5Ω		C22500-5		36 Microhenries - Black Dot
L12	4th Video IF	.2Ω		C22556		
L13	Sound Trap	.2Ω		C22558		
L14	5th Video IF	.2Ω		C22557		
L15	Peaking	4.5Ω		C22500-7		93 Microhenries - Wound on 10KΩ resistor. Orange Identification Dot
L16	Peaking	6.8Ω		C22500-1		180 Microhenries - Wound on 39KΩ resistor. White Identification Dot.
L17	4.5MC Trap	6.8Ω		C22501		
L18	Peaking					250 Microhenries - Green Ident. Dot.
L19	Peaking	6.8Ω		C22500-1		180 Microhenries - Wound on 39KΩ resistor. White Identification Dot.
L20	Peaking	4.5Ω		C22500-3		250 Microhenries - Green Ident. Dot
L21	Sound IF	.2Ω	.2Ω	C22565		
L22	Disc. Trans.	.1Ω	.1Ω	C22566		
L23	Horiz. Osc. Trans.	34Ω	85Ω	C22563		(Wave Forming Coil - 40Ω Resistance)
L24	Width Control	.5Ω		C22559		
L25	Horiz. Linear.	36Ω		C22562		

MISCELLANEOUS

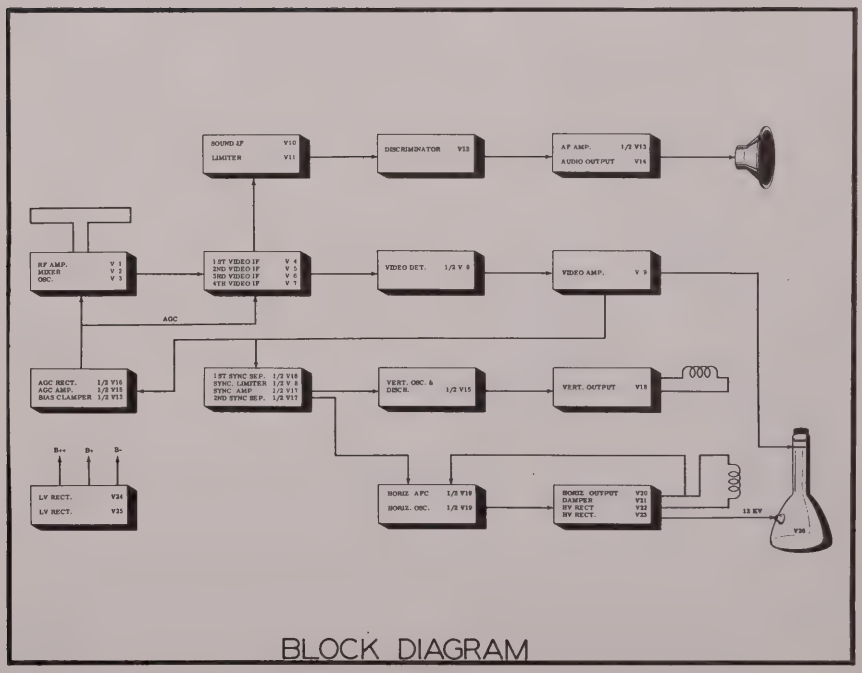
ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	RF Tuner Assembly	AE22550-1	
M2	Fuse	A22493	Type GJV - .25Amp.
M3	Fuse	A22493	Type GJV - .25Amp.
M4	Switch	A22549	Width
M5	Switch		Cabinet Interlock
M6	Ion Trap	C22568	
	Cabinet	R22674	
	Cabinet Back	C22680	
	Safety Glass	D22675	
	Knob	A22682	Channel Selector
	Knob	A22683	Fine Tuning
	Knob	A22684	Volume
	Knob	A22685	Contrast
	Knob	A22686-1	Vertical Hold
	Knob	A22686-2	Horizontal Hold
	Knob	A22686-3	Brightness
	Trimmer	A22418	Horiz. Locking Range (10 -160MMF)
			Horiz. Drive (40 - 370MMF)



CABINET-REAR VIEW

CRITICAL LEAD DRESSING

1. All by-pass condenser leads on the IF strip as short as possible.
2. Short lead between body of R66 and pin 5 of V12.
3. Do not reroute bus wire from pin 2 of V11.
4. Filament leads between V12, V13, V14 keep down to chassis and away from grid and plate leads.
5. All leads crossing IF circuits should be held close to chassis. Movement of such leads could change alignment.
6. Pix IF coupling capacitors must be away from the chassis. Moving these will affect alignment.
7. All peaking coils should be held away from chassis.
8. Green lead from pin 2 of V9, white-orange lead from pin 8 of V9 away from chassis.
9. Blue lead from pin 5 of V13 close to chassis.
10. C54, C55 away from chassis.
11. R105, R106, R107, R108 and R111 should have long leads and held up and away from tube sockets and chassis.
12. Keep leads from L22 (width control) away from transformer frame.



BLOCK DIAGRAM

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENTS

Connect a jumper across terminals "C" and "D" of L21. Tune in a station and if possible proceed as follows:

1. Turn the horizontal hold control fully clockwise. Adjust the frequency adjustment (B1) so the picture is just out of sync and the horizontal blanking bar appears as a single vertical bar.

Turn the hold control approximately a quarter of a turn from the fully clockwise position and notice the picture width and linearity. If the width and linearity is incorrect, adjust horizontal width switch, horizontal width slug (B3), horizontal drive trimmer (B2), and horizontal linearity slug (B4) until the picture is correct. Note that in the two widest positions of the width switch, B3 is disconnected.

HORIZONTAL LOCKING RANGE ADJUSTMENT

Turn the horizontal hold control fully counter-clockwise. Remove signal momentarily by turning channel switch to another channel and back again. Slowly turn the hold control clockwise and note the number of diagonal bars that appear just before the picture "syncs".

If more than 9 bars are present just before synchronization, turn the horizontal locking range trimmer (B5) slightly clookwise. If less than 7 bars are present, turn B5 slightly counter-clockwise.

Turn the hold control counter-clockwise and momentarily interrupt the signal and check the number of bars present at the pull-in point. Repeat this procedure until 7 to 9 bars are present.

HORIZONTAL OSCILLATOR WAVEFORM ADJUSTMENT

Remove the jumper across terminals "C" and "D" of L21.

Turn the horizontal hold control fully clockwise. Adjust B6 with a non-metallic screwdriver until the horizontal blanking bar is present on the raster.

Connect the low capacity probe of an oscilloscope to terminal "C" of L21. Turn the horizontal hold control one quarter of a turn from the clockwise position until the picture "syncs". The pattern on the scope should be similar to Fig 5. Adjust B6 until the broad and narrow peaks are of the same amplitude (If necessary, while making this adjustment turn the hold control to keep the picture in synchronization.)

This adjustment must be carefully made to assure correct circuit operation. If the broad peak is lower in amplitude than the sharp peak, the oscillator drift becomes greater and the circuit has great susceptibility to noise pluses. However, if the broad peak is greater in amplitude than the sharp peak, the oscillator is overstabilized, and pull-in range inadequate, and there is the possibility of double triggering of the oscillator as the horizontal hold control approaches the extreme clockwise position.

HORIZONTAL OSCILLATOR ADJUSTMENTS CHECK

Turn the horizontal hold control fully counter-clockwise. Momentarily remove the signal and then slowly turn the hold control clockwise and note the number of bars present just before the picture synchronizes.

If more than 3 bars are present, turn B5 slightly clockwise. If less than 3 bars are present, turn B5 slightly counter-clockwise. Momentarily remove the signal and recheck the number of bars present at the pull-in point. Repeat this procedure until 3 bars are present just before synchronization occurs.

Turn the horizontal hold control fully clockwise. The picture should be just out of synchronization to the extent that the horizontal blanking bar appears as a single vertical or diagonal bar in the picture. Retouch B6 until this condition exists.

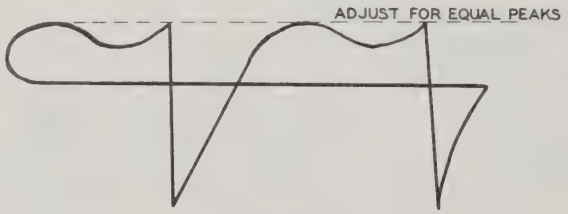


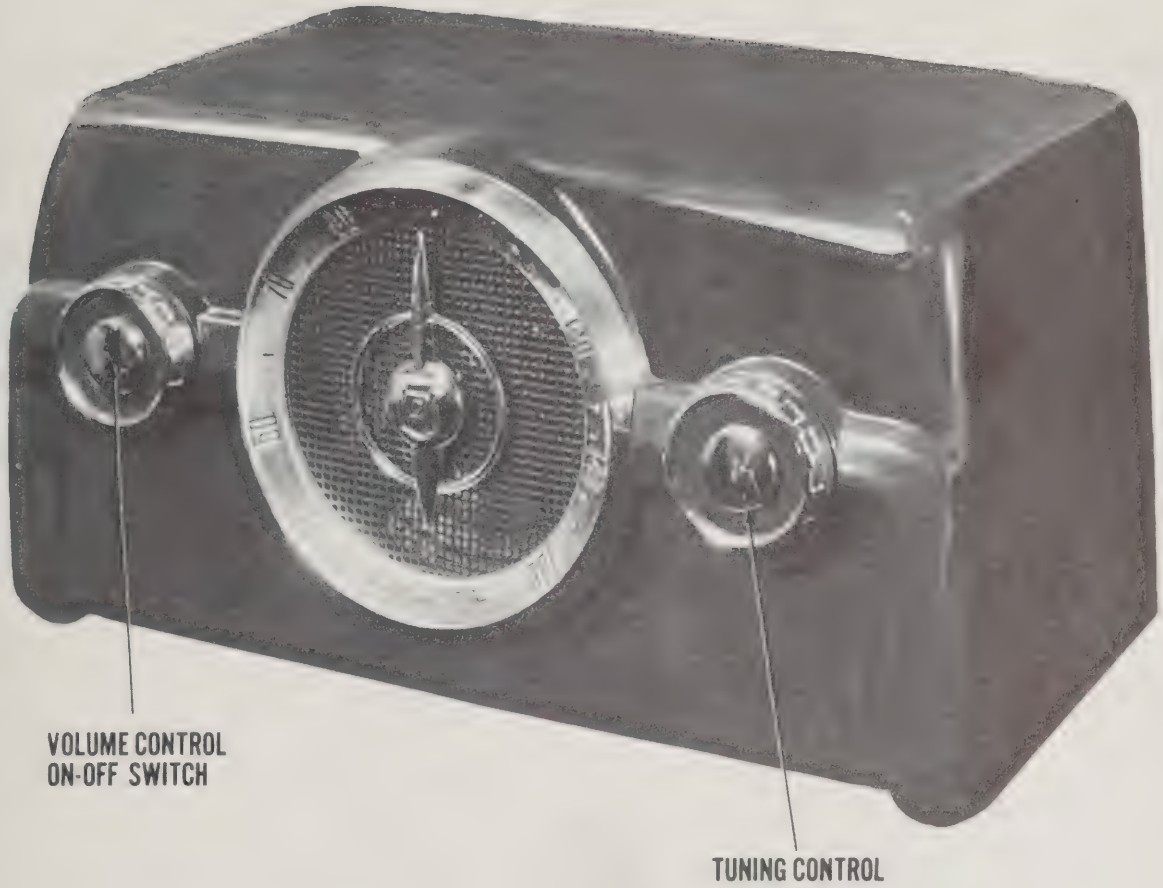
FIG. 5

AGC THRESHOLD ADJUSTMENT

Turn the set on and tune in a local TV station. Turn the contrast control to the mid-position of its range. Adjust the AGC threshold control and brightness control for a picture with proper contrast and brightness.

CROSLEY MODELS 10-135, 10-136E 10-137, 10-138, 10-139, 10-140

CROSLEY MODELS 10-135, 10-136E, 10-137, 10-138, 10-139, 10-140



CROSLEY MODELS 10-135, 10-136E, 10-137, 10-138, 10-139, 10-140

CROSLEY MODEL 10-138

TRADE NAME	Crosley, Models 10-135, 10-136E, 10-137, 10-138, 10-139, 10-140
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 or 6BJ6 IF Amp., 12AV6 or 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .23 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum postion. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to ext. antenna terminal. Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	200MMF	"	1620KC	"	"	A5	"
3.	200MMF	"	1400KC	Tune for max. output	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CROSLEY MODEL 10-138

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2A	IF Amp.	12BA6	12BA6	7BK	
B	IF Amp.	6BJ6	6BJ6	7CM	
V3A	DET-AVC-AF	12AV6	12AV6	7BT	
B	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	100	150	B-147174	PRSA1684D			TA-315	Filter-Red
B	30	150					UT-101	Filter-Blue
C	10	150						Filter-Green
C2	18		C-137727-109	GP18K	D6-180	GP1K-18	MS-42	Osc. Grid Cap.-See Note
C3	.1	200	39001-19	P288-1			TM-1	AVC Filter
C4	.08	200	39001-19	P288-1			TM-1	Isolation
C5	100		B-143686-3	GP100M	D6-101	GP1K-100	1FM-31	Diode RF Filter
C6	.0005	600	39001-5	1468-0005	D6-501	GP2K-500	TC-35	Audio Coupling
C7	.005	600	39001-11	P688-005	D6-502	811-005	TM-25	Tone Compensation
C8	.002	600	39001-74	P688-002	D6-202	GP2M-002	TM-22	Feedback
C9A	2000		C-144675-1	GP2000M	D6-202	GP2M-002		Audio Coupling
B	200			GP200M	D6-201	GP2K-200	34C3	AF Amp. Plate Bypass
C	5000			GP5000M	D6-502	811-005		Audio Coupling
D	200			GP200M	D6-201	GP2K-200		Diode RF Filter
C10	.01	400	39001-13	P488-01	D6-103	821-01	TM-11	Output Plate Bypass
C11	.08	200	39001-19	P288-1			72P52	Line Isolation
C12	.05	400	39001-17	P488-05			TM-15	Rect. Plate Bypass

Note. Some models use 39MMF in this application.

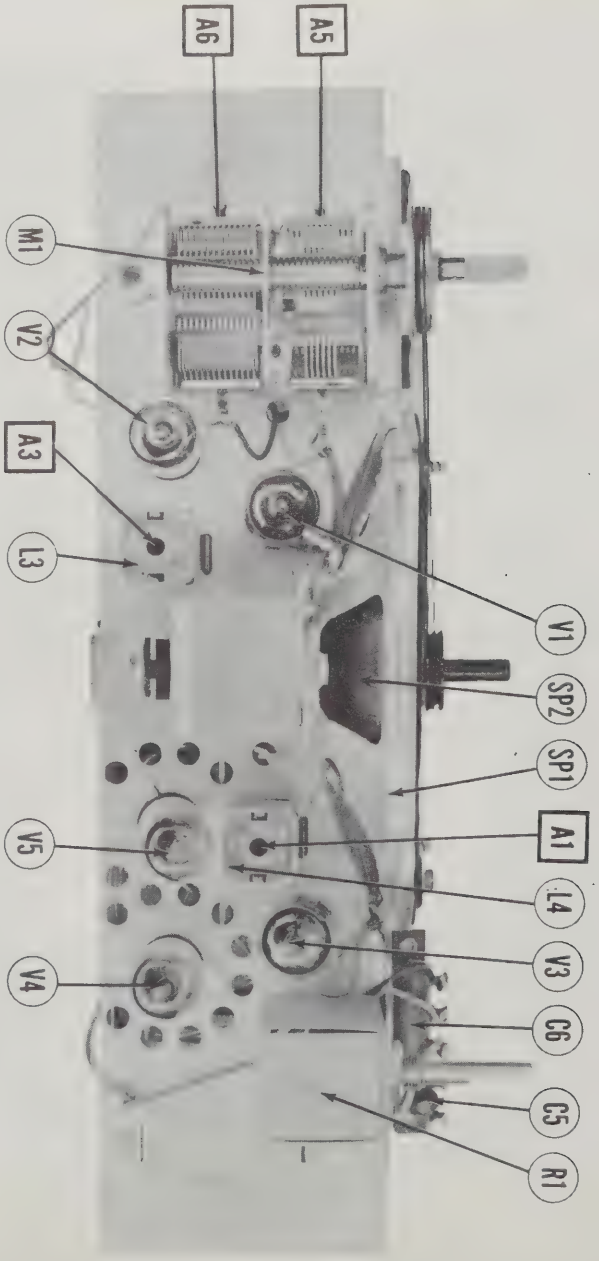
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	3 Meg.	½	B-147179		T-123		Volume control tapped @ 300KΩ
B	Switch				SW-A		Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	39373-60	BTS-22K	Osc. Grid
R3	2.2 Meg.	½	39373-97	BTS-2.2 Meg.	AVC Network
R4	100KΩ	½	39373-74	BTS-100K	Diode Filter
R5	10 Meg.	½	39373-107	BTS-10 Meg.	AF Amp. Grid
R6	5600Ω	½	39374-34	BTS-5600	Feedback
R7	680KΩ	½	39373-90	BTS-680K	Tone Compensation
R8	47KΩ	½	39373-67	BTS-47K	Tone Compensation
R9	470KΩ	½	39373-87	BTS-470K	AF Amp. Plate
R10	470KΩ	½	39373-87	BTS-470K	Output Grid
R11	150Ω	½	39373-16	BW-½-150	Output Cathode
R12	1000Ω	½	39373-33	BTS-1000	Filter
R13	1200Ω	1	39374-114	BW-1-1200	Filter
R14	100Ω	2	39374-189		Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3KΩ	4.1Ω	350Ω	.6Ω	B-147171	A-3876 *	A-3025 *	RO-2	* Drill one new mounting hole.

SPEAKER

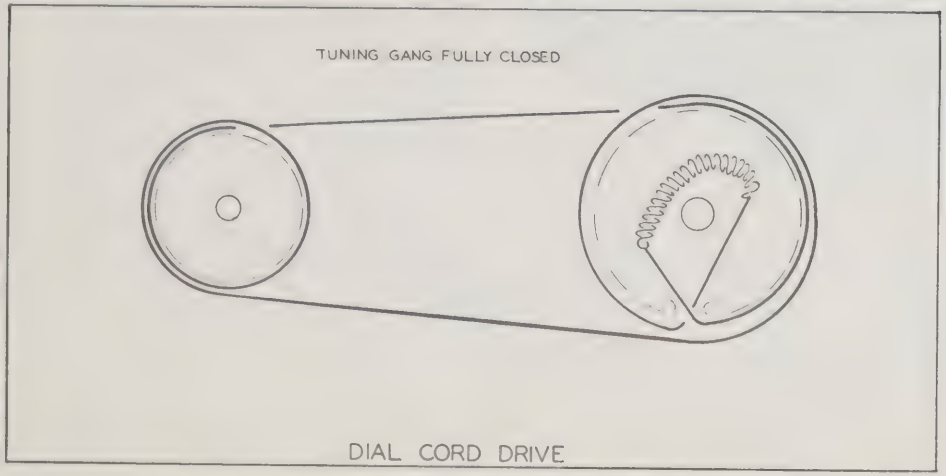
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	AD-145956-2	ST-107 # MOD. P5-V	52A1 #	# Drill and tap magnet frame.
	PM	4.1Ω				
SP2	CONE DIA.	V. C. DIA.				
	5"	9/16				

R F COILS

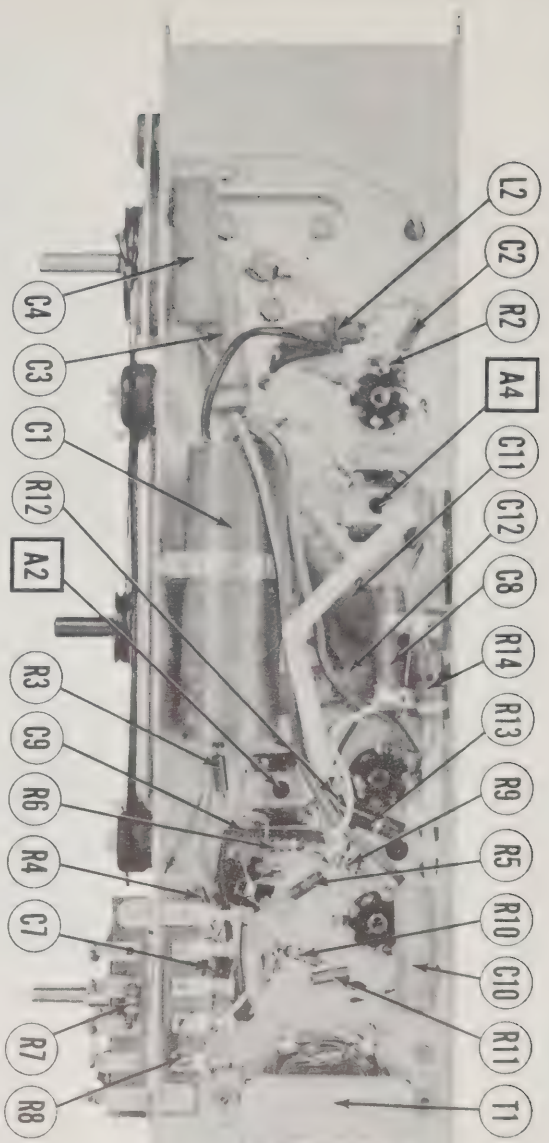
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.	
L1	Loop Ant.	0Ω	3Ω	AC-147239		Mounted on cabinet back with phono jack
L2	Osc. Coil	1Ω	10Ω	AW-146323	14-1073	
L3	1st IF	16.5Ω	16Ω	AC-139919-3	16-6678	
L4	2nd IF	16.5Ω	16Ω	AC-139919-3	16-6678	

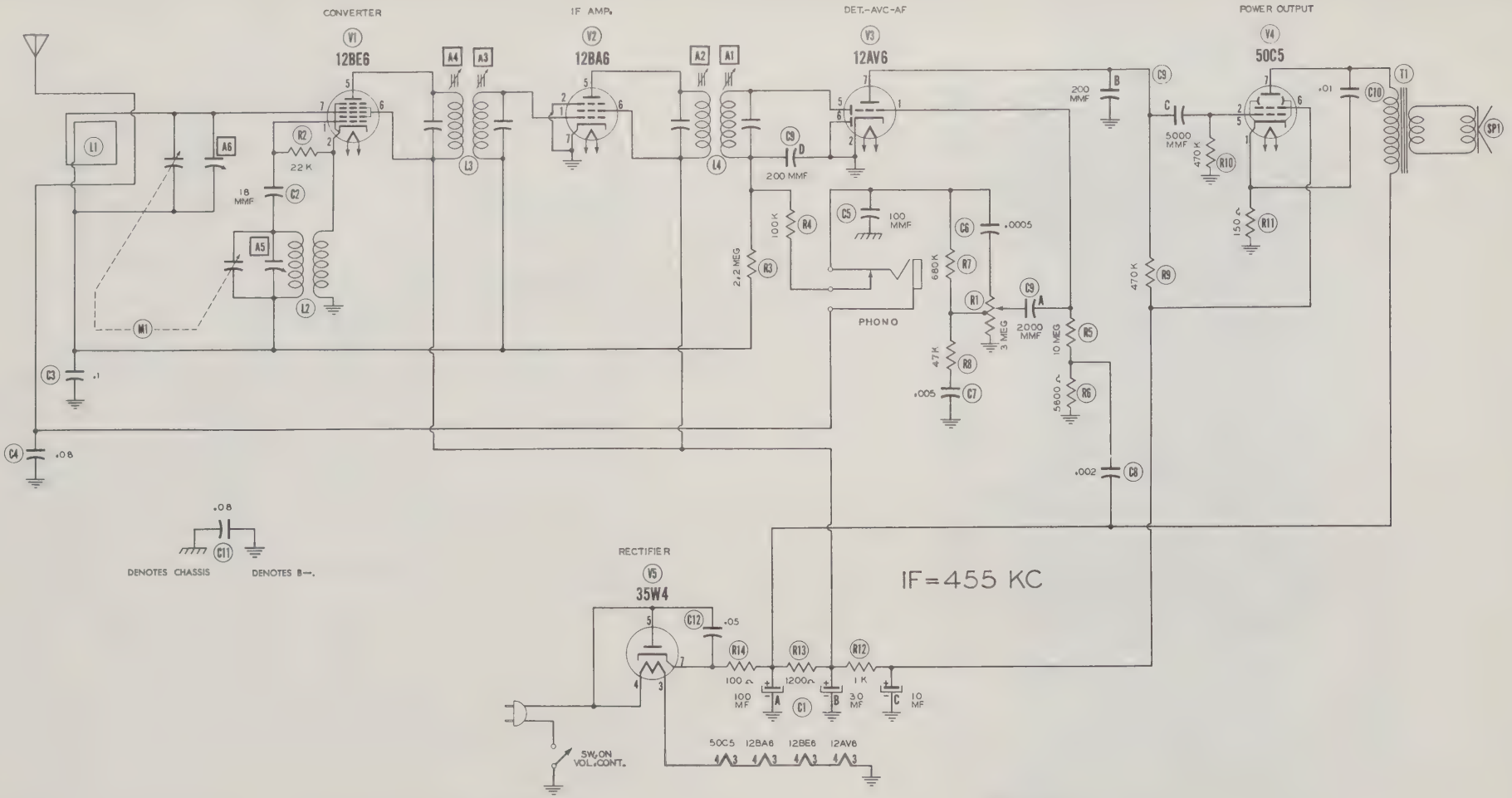
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M1	2 Gang Var. Cap.	B-147180	(30-525MMF, 23-192MMF)
	Dial Pointer	C-147149-1	Models 10-135, 10-139, 10-140
	Dial Pointer	D-147149-2	Models 10-136E, 10-137
	Dial Pointer	D-147149-3	Model 10-138
	Knob	AB-147159-1	Model 10-135
	Knob	AB-147159-2	Model 10-136E
	Knob	AC-147159-3	Model 10-137
	Knob	AC-147159-4	Model 10-138
	Knob	AC-147159-5	Model 10-139
	Knob	AC-147159-6	Model 10-140



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-6.2VDC	0V.	12VAC	24VAC	85VDC	85VDC	-.6VDC
V 2	12BA6	-.6VDC	0V.	24VAC	36VAC	85VDC	85VDC	0V.
V 3	12AV6	-.8VDC	0V.	0V.	12VAC	-.5VDC	0V.	80VDC
V 4	50C5	5.5VDC	0V.	36VAC	35VAC	0V.	80VDC	100VDC
V 5	35W4	112VDC	0V.	85VAC	117VAC	117VAC	110VAC	118VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	13Ω	24Ω	†1.3KΩ	†1.3KΩ	3.5 Meg.
V 2	12BA6	3.5 Meg.	0Ω	24Ω	36Ω	†1.3KΩ	†1.3KΩ	0Ω
V 3	12AV6	10 Meg.	0Ω	0Ω	12Ω	1.2 Meg.	0Ω	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	90Ω	470KΩ	†2.4KΩ	†450Ω
V 5	35W4	†100Ω	0Ω	85Ω	120Ω	120Ω	110Ω	200KΩ

† MEASURED FROM PIN 7 OF V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

DUMONT
MODELS RA-103D, RA-104A, RA-110A

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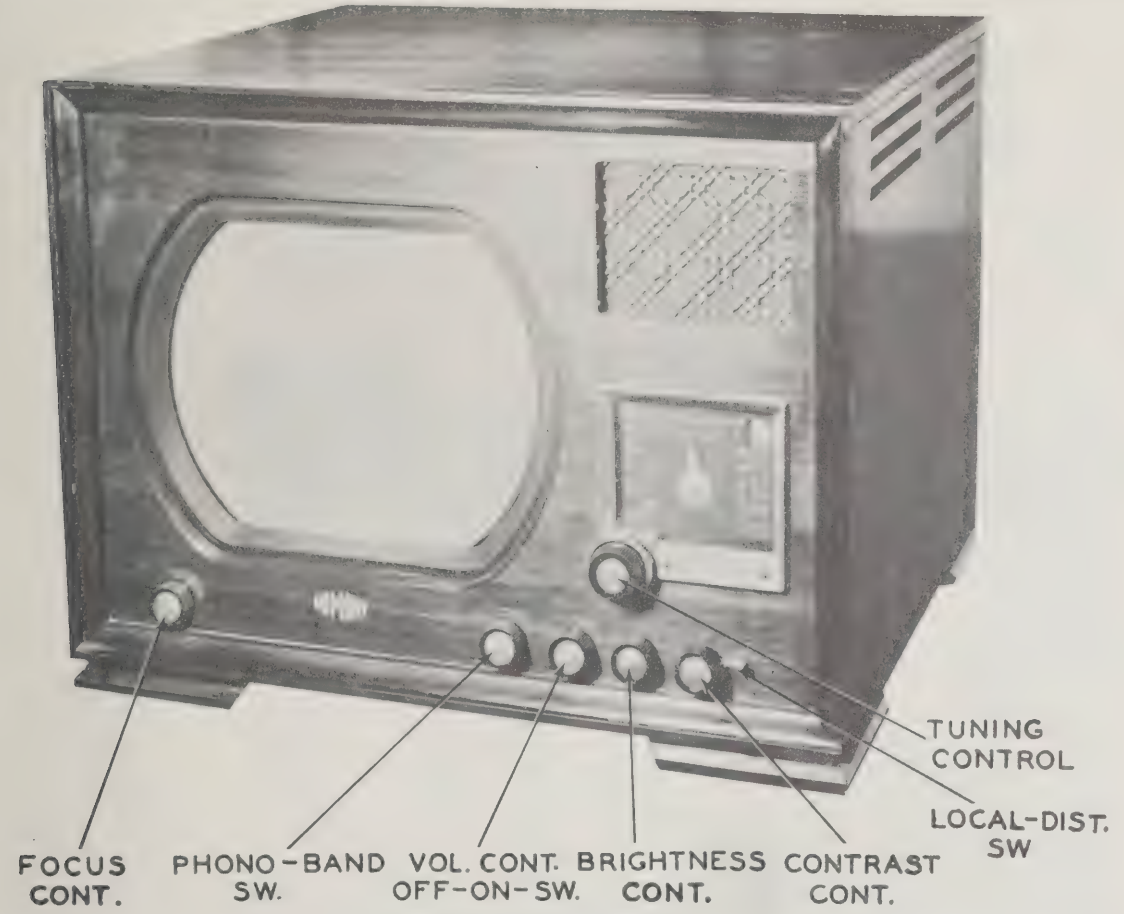
DUMONT
MODELS RA-103D, RA-104A, RA-110A



DUMONT MODEL RA-103D

TRADE NAME	Dumont, Models RA-103D "Rumson" or "Sheffield", RA-104A "Hastings" or "Wellington", RA-110A "Westwood" or "Fairfield"
MANUFACTURER	Allen B. Dumont Laboratories, Inc., 2 Main Ave., Passiac, New Jersey
TYPE SET	TV-FM Receiver
TUBES	Thirty
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	44 thru 216MC (Continuous Tuning) RATING 2.8 Amp. @ 117 Volts AC

INDEX

Alignment Instructions 6
Block Diagram 20
Dial Cord Stringing 10
Disassembly Instructions 10
Horiz. and Vertical Sweep Adjustment 19
Parts List and Description 13, 14, 15, 16
Picture Tube Sensitivity Adjustment 19
Photographs
Cabinet-Rear View 19
Photographs (continued)
Capacitor Identification 11, 18
Chassis-Top View 3, 10
RF Tuner 7
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification ... 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

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DATE 5-50 SET 93 FOLDER 4

DUMONT
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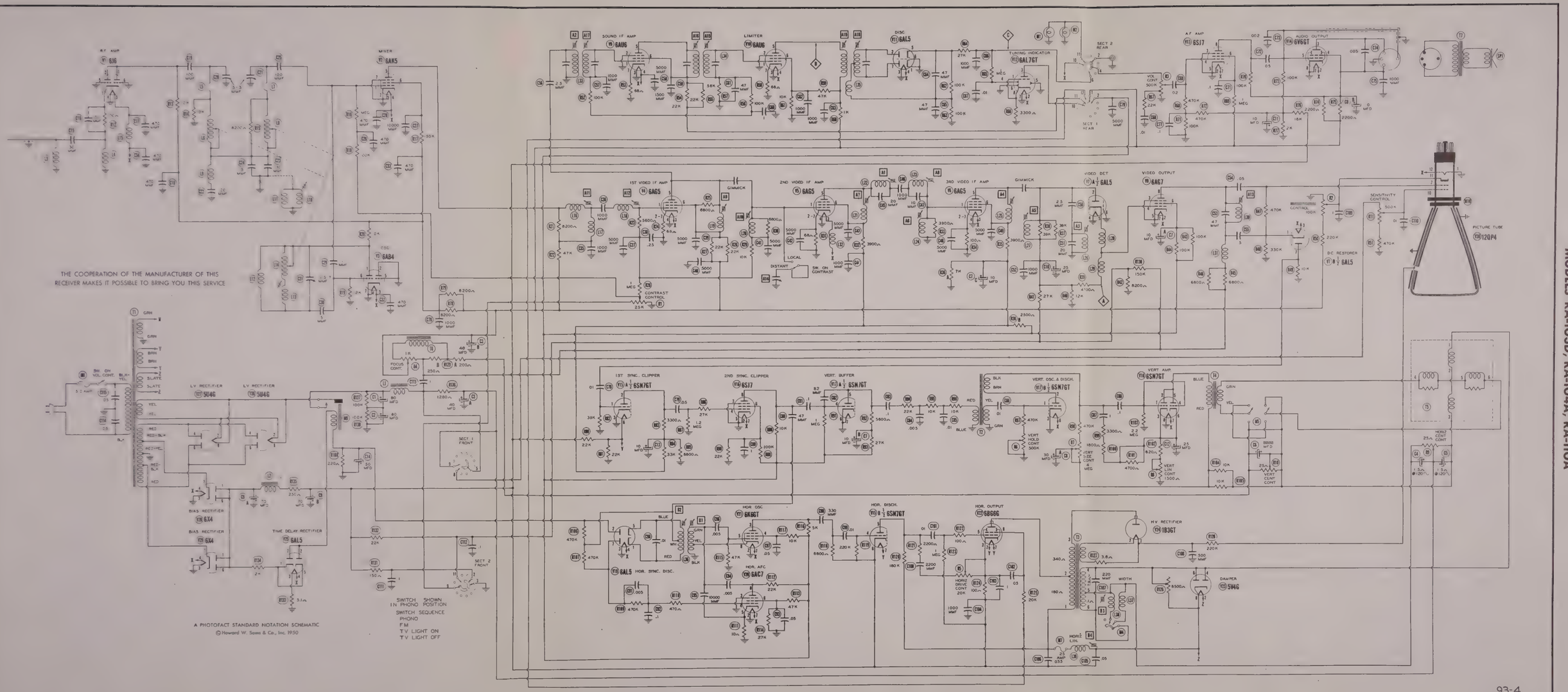

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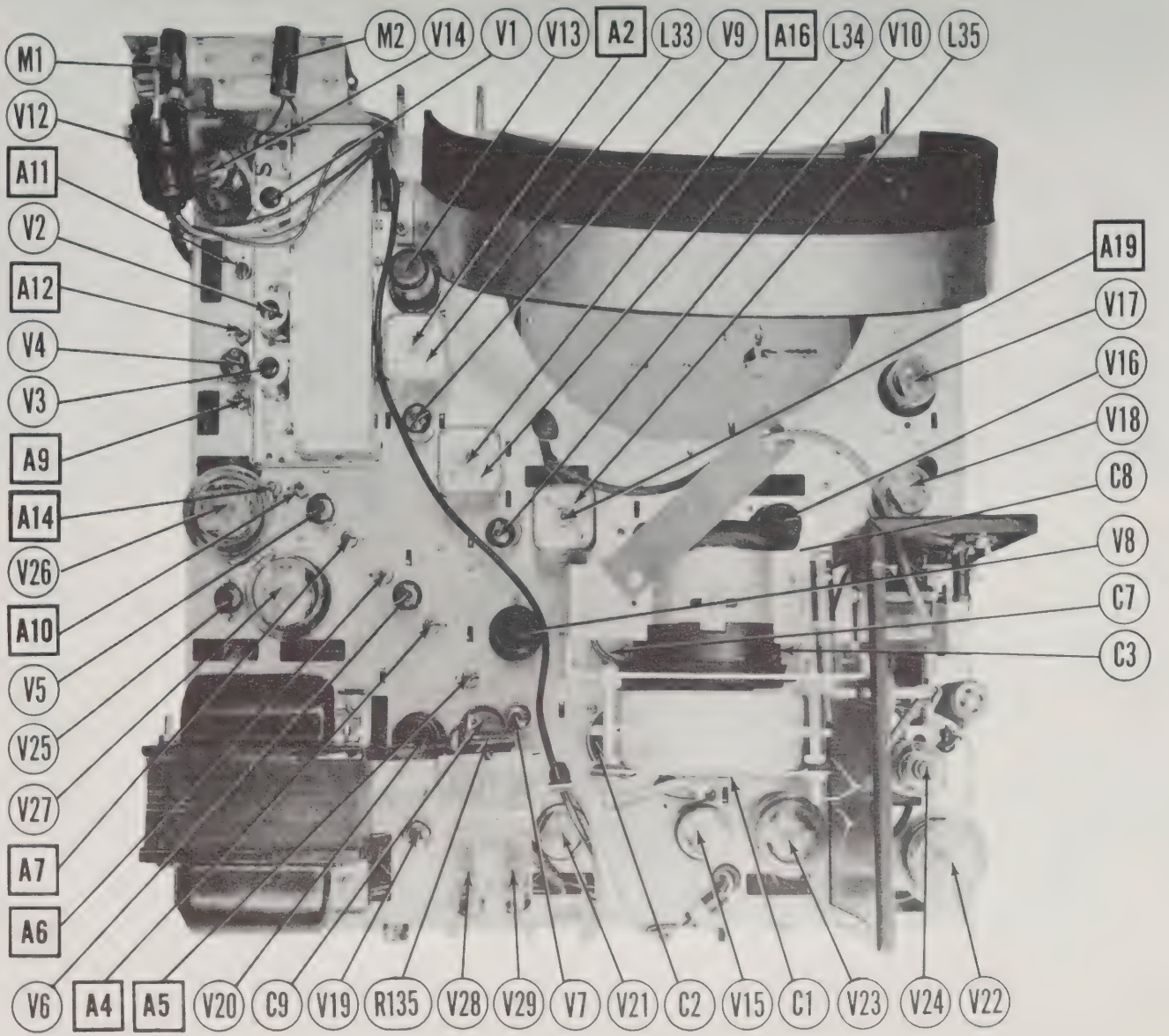
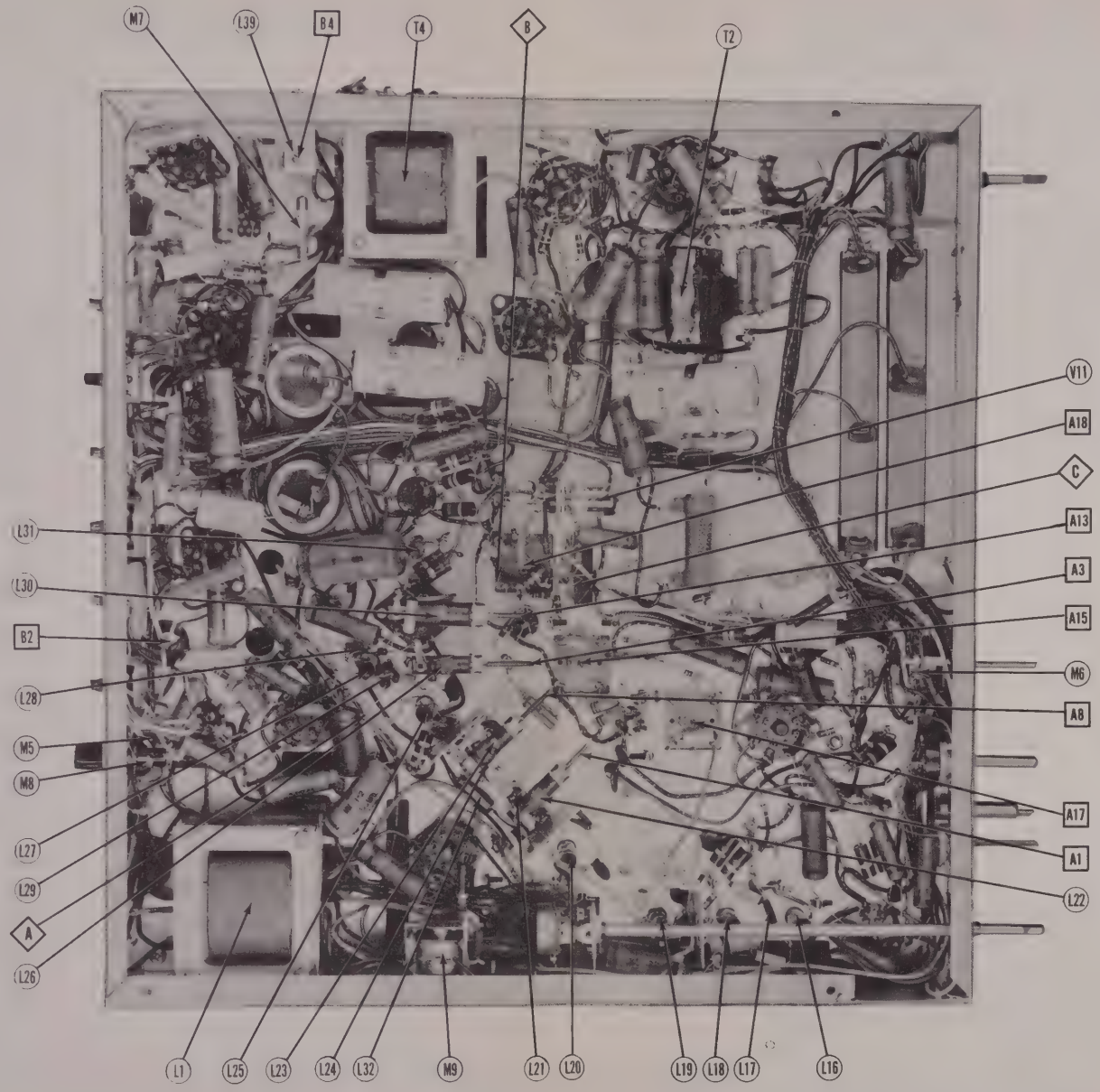
MODELS RA-103D, RA-104A, RA-110A

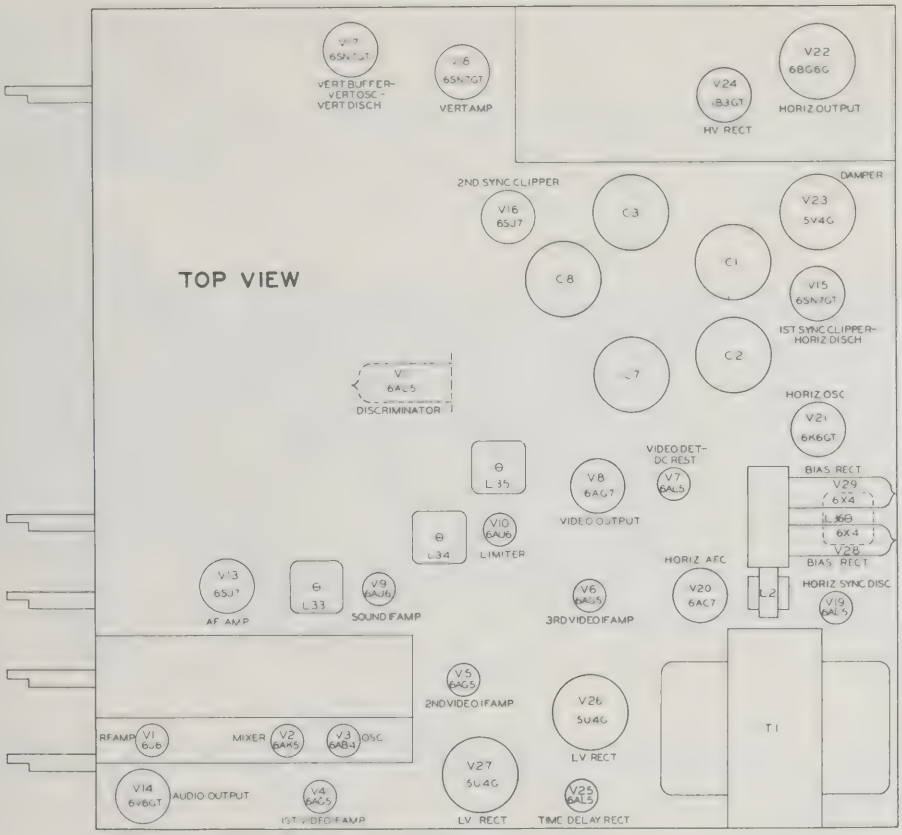
93-4

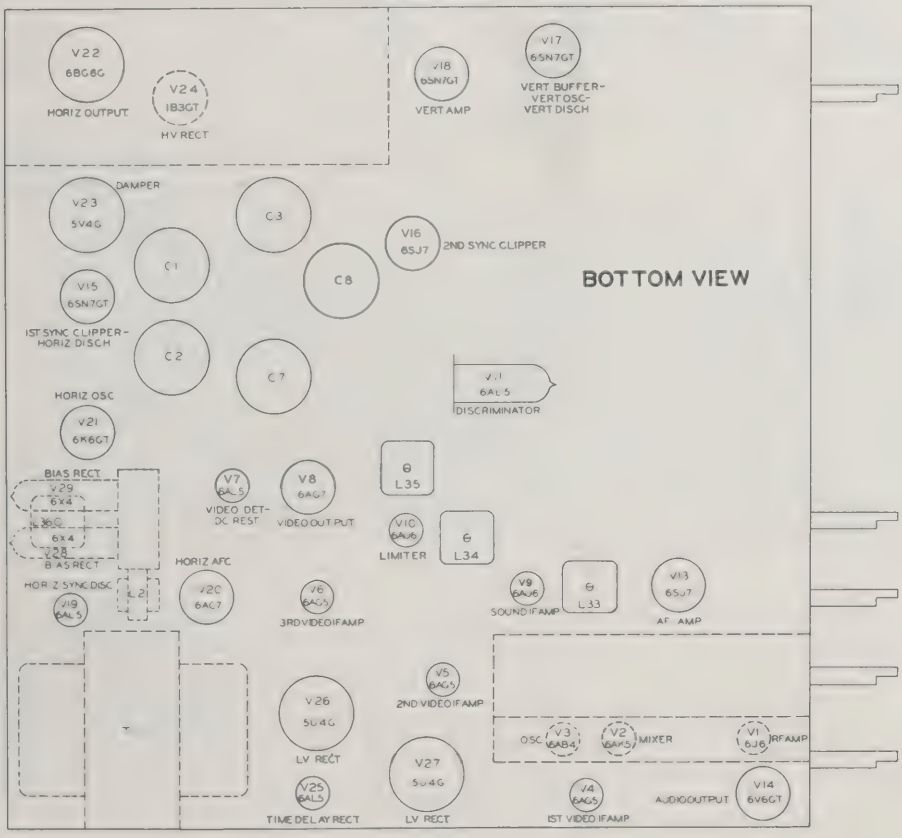


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V21) from its socket.
Turn the function switch to "Television" (maximum clockwise).

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) to prevent erroneous indications.
If the set has a "LOCAL-DISTANCE" switch set it to "LOCAL".
Pre-set A14 to the center of the range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	Not used	21.9MC (400 ∿ AM Mod.)	Any	Vert. Amp. to Point ◇A◇. Low side to chassis	A1, A2	Adjust for MINIMUM 400 ∿ indication on scope.
2.	.01MFD	"	"	20.4MC (400 ∿ AM Mod.)	"	"	A3	"
3.	.01MFD	High side to pin 1 (Grid) of 6AG5 (V6). Low side to chassis.	25MC (10MC SWP)	21.9MC 22.9MC 26.4MC	"	"	A4, A5	Turn contrast control to maximum counter-clockwise. Short A8. Adjust for response curve similar to Fig 1 with markers as shown.
4.	.01MFD	High side to pin 1 (Grid) of 6AG5 (V5). Low side to chassis.	"	22.4MC 26.4MC	"	"	A6, A7, A8	Remove the short across A8. Adjust for response curve similar to Fig 2.
5.	.01MFD	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	"	22.9MC 25.65MC 26.4MC	"	"	A9, A10	Turn the contrast control to mid-position. Adjust for response curve similar to Fig 3 with markers as shown.
6.	Direct	High side to an ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	"	22.9MC 26.65MC 26.4MC	"	"	A11, A12	Adjust for response curve similar to Fig 4 with markers as shown. If necessary retouch A9 and A10 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	Not used	4.5MC (400 ∿ AM Mod.)	Any channel not used locally	Vert. Amp. thru probe detector (Fig. 4) to pin 2 (Grid) of picture tube. Low side to chassis.	A13	Adjust for MINIMUM 400 ∿ indication on scope.

LOCAL-DISTANCE ADJUSTMENTS

This adjustment appears only in those models having a "LOCAL-DISTANCE" switch.
After the set has been aligned turn the "LOCAL-DISTANCE" switch to "DISTANCE" and tune in a weak (50 microvolt) signal. If no weak signals is available use a strong signal and an attenuater in the antenna lead. Adjust A10 for maximum picture strength. Tune in a strong signal (500 microvolts) and adjust A14 for best picture.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 1 (Grid) of 6AG5 (V4). Low side to chassis.	21.9MC (1MC SWP)	21.9MC	Any	Vert. Amp. thru probe detector (Fig 4) to point ◇B◇. Low side to chassis.	A15, A16, A17	Adjust for maximum amplitude and symmetry as per Fig 5.
9.	.01MFD	"	"	"	"	Vert. Amp. to point ◇C◇. Low side to chassis.	A18, A19	Adjust A19 to place 21.9MC marker at center of diagonal line. Adjust A20 for maximum amplitude and straightness of diagonal line as per Fig 6.

TUNER ALIGNMENT

The RF, mixer, and oscillator circuits in this receiver are pre-set at the factory and are very stable. They should not require adjustment in the field.

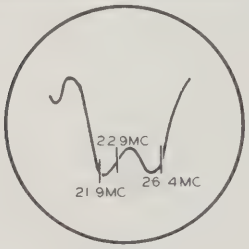


FIG.1

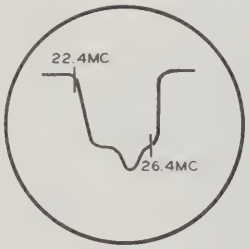


FIG. 2

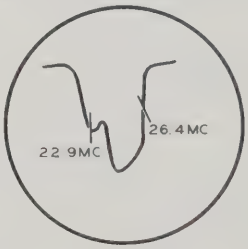


FIG. 3

FIG. 5

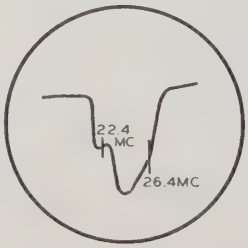


FIG. 4

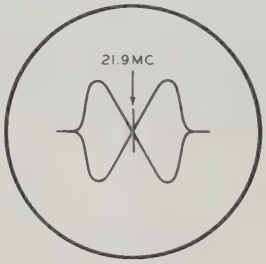
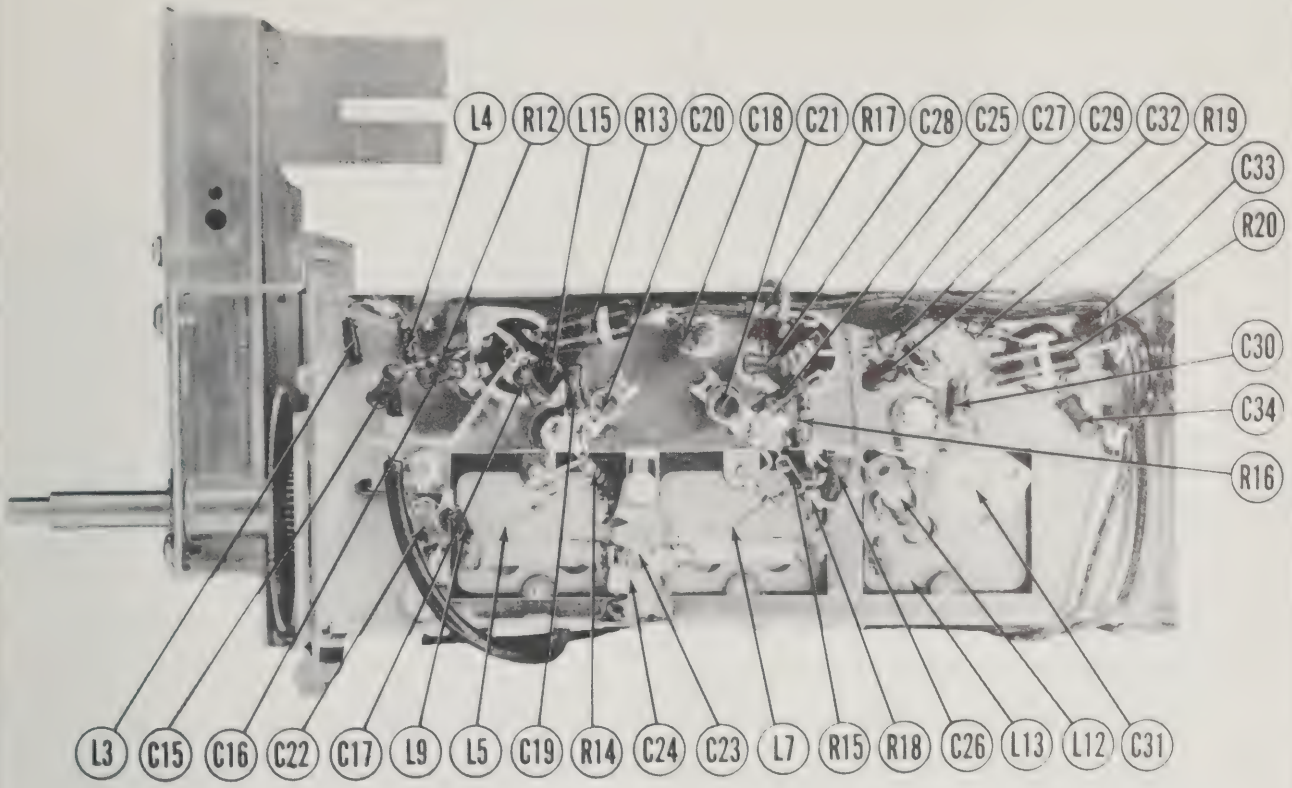
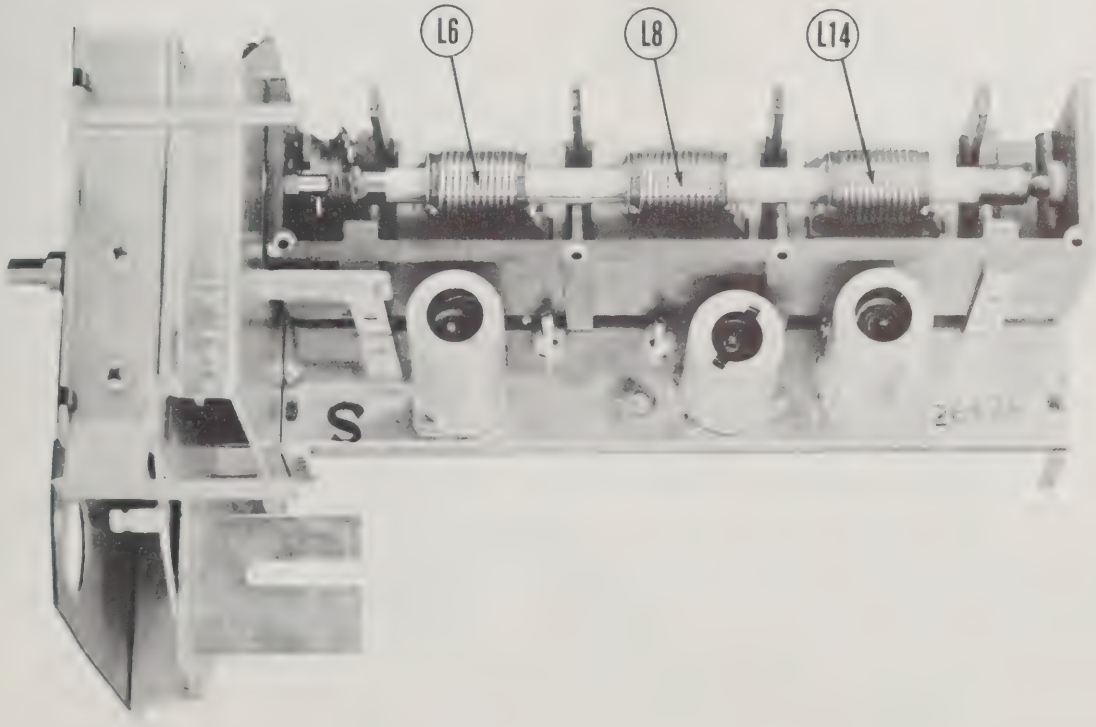


FIG. 6



RF TUNER



RF TUNER

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	100VDC	100VDC	6.3VAC	0V.	0V.	0V.	1.6VDC		
V 2	6AK5	-.6VDC	0V.	0V.	6.3VAC	140VDC	80VDC	0V.		
V 3	6AB4	135VDC	0V.	6.3VAC	0V.	0V.	§-3.5VDC	0V.		
V 4	6AG5	-.2VDC	1.1VDC	6.3VAC	0V.	140VDC	140VDC	1.1VDC		
V 5	6AG5	0V.	.8VDC	6.3VAC	0V.	122VDC	122VDC	.8VDC		
V 6	6AG5	0V.	1.2VDC	6.3VAC	0V.	125VDC	125VDC	1.2VDC		
V 7	6AL5	2.8VDC	-4VDC	6.3VAC	0V.	-.1VDC	0V.	-.2VDC		
V 8	6AG7	0V.	6.3VAC	0V.	-3.7VDC	0V.	140VDC	0V.	215 VDC	
V 9	6AU6	-.1VDC	0V.	0V.	6.3VAC	155VDC	155VDC	1.2VDC		
V 10	6AU6	-.2VDC	0V.	0V.	6.3VAC	310VDC	43VDC	0V.		
V 11	6AL5	0V.	-.4VDC	0V.	6.3VAC	5.8VDC	0V.	-.5VDC		
‡ V 12	6AL7GT	0V.	6.3VAC	310VDC	0V.	0V.	0V.	0V.	0V.	‡
V 13	6SJ7	0V.	0V.	0V.	-.8VDC	0V.	65VDC	6.3VAC	165VDC	
V 14	6V6GT	0V.	6.3VAC	250VDC	260VDC	-13VDC	-14VDC	0V.	0V.	
V 15	6SN7GT	-.4VDC	20VDC	0V.	¶-37VDC	¶220VDC	¶ 0V	#-60VDC	#-60VDC	
V 16	6SJ7	0V.	0V.	0V.	-.5VDC	0V.	46VDC	6.3VAC	290VDC	
V 17	6SN7GT	-19VDC -26VDC	75VDC	0V.	.3VDC	70VDC	0V.	0V.	6.3VAC	
V 18	6SN7GT	0V.	320VDC	11VDC 16VDC	0V.	320VDC	11VDC 16VDC	6.3VAC	0V.	
V 19	6AL5	1.5VDC	-1.9VDC	0V.	6.3VAC	0V.	0V.	-1.2VDC		
V 20	6AC7	0V.	0V.	0V.	-1.3VDC	0V.	105VDC	6.3VAC	275VDC	
V 21	6K6GT	0V.	0V.	215VDC	215VDC	-46VDC	310VDC	6.3VAC	.5VDC	
V 22	6BG6G	0V.	#-60VDC	¶8.6VDC	¶-21VDC	¶-21VDC	¶430VDC	#-60VDC	270VDC	TOP CAP *
V 23	5V4G	90VDC	500VDC	410VDC	410VDC	410VDC	410VDC	380VDC	500VDC	
V 24	1B3GT	* DO NOT MEASURE.								
V 25	6AL5	-45VDC	-43VDC	1.2VAC	6.3VAC	-45VDC	0V.	-43VDC		
V 26	5U4G	0V.	440VDC	140VAC	380VAC	-13VDC	380VAC	410VDC	440VDC	
V 27	5U4G	0V.	440VDC	140VAC	380VAC	390VAC	380VAC	2.4VAC	440VDC	
V 28	6X4	-142VDC	0V.	0V.	6.3VAC	-112VDC	-142VDC	135VAC		
V 29	6X4	-142VDC	-140VDC	0V.	6.3VAC	0V.	-142VDC	135VAC		
V 30	12QP4	0V.	1.6VDC	PIN 10 410VDC	PIN 11 90VDC	PIN 12 6.3VAC				

NOTE : CONTRAST CONTROL SET AT MAXIMUM.

§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
‡ TAKEN IN "FM" POSITION.
¶ MEASURED FROM PIN 6 OF V15.
# 6.3VAC MEASURED ACROSS FILAMENTS.

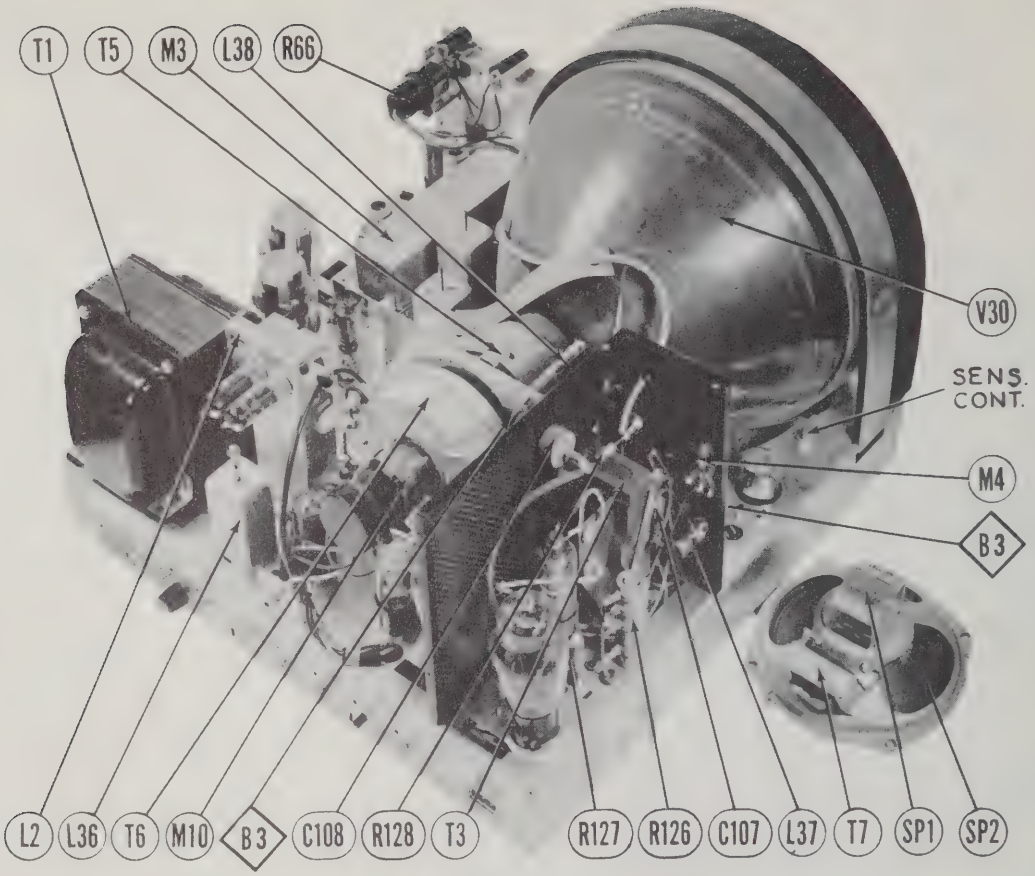
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†15KΩ	†15KΩ	.1Ω	0Ω	0Ω	0Ω	100Ω		
V 2	6AK5	1.2 Meg.	0Ω	0Ω	.1Ω	†50KΩ	†150KΩ	0Ω		
V 3	6AB4	†15KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
V 4	6AG5	1.1Meg.	68Ω	.1Ω	0Ω	†13KΩ	†13KΩ	68Ω		
V 5	6AG5	1.1 Meg.	68Ω	.1Ω	0Ω	†7KΩ	†7KΩ	68Ω		
V 6	6AG5	0Ω	100Ω	.1Ω	0Ω	†7KΩ	†7KΩ	100Ω		
V 7	6AL5	330KΩ	9KΩ	.1Ω	0Ω	14KΩ	0Ω	10KΩ		
V 8	6AG7	0Ω	.1Ω	0Ω	14KΩ	0Ω	†50KΩ	0Ω	†4.5KΩ	
V 9	6AU6	250KΩ	0Ω	0Ω	.1Ω	†12KΩ	†12KΩ	68Ω		
V 10	6AU6	56KΩ	0Ω	0Ω	.1Ω	†2KΩ	†13KΩ	68Ω		
V 11	6AL5	0Ω	100KΩ	0Ω	.1Ω	150KΩ	0Ω	100KΩ		
‡ V 12	6AL7GT	3.3KΩ	.1Ω	†2KΩ	1 Meg.	0Ω	0Ω	0Ω	3.3KΩ	‡
V 13	6SJ7	0Ω	0Ω	0Ω	570KΩ	0Ω	† 1 Meg.	.1Ω	†100KΩ	
V 14	6V6GT	0Ω	.1Ω	†2KΩ	†1.6KΩ	100KΩ	2KΩ	0Ω	0Ω	
V 15	6SN7GT	39KΩ	14KΩ	0Ω	¶220KΩ	†180KΩ	¶0Ω	14KΩ	14KΩ	
V 16	6SJ7	0Ω	0Ω	0Ω	1.2 Meg.	0Ω	†23KΩ	.1Ω	10KΩ	
V 17	6SN7GT	1 Meg. 470KΩ	†4.5Meg. †480KΩ	0Ω	†1 Meg.	†33KΩ	†0Ω	0Ω	.1Ω	
V 18	6SN7GT	2.2 Meg.	†6KΩ	2.5KΩ 800Ω	2.2 Meg.	†6KΩ	2.5KΩ 800Ω	.1Ω	0Ω	
V 19	6AL5	470KΩ	220Ω	0Ω	.1Ω	470KΩ	Inf.	1 Meg.		
V 20	6AC7	0Ω	0Ω	0Ω	1.5 Meg.	10Ω	20KΩ	.1Ω	22KΩ	
V 21	6K6GT	0Ω	0Ω	6KΩ	10KΩ	47KΩ	†500Ω	.1Ω	20Ω	
V 22	6BG6G	0Ω	14KΩ	¶100Ω	¶1 Meg.	¶1 Meg.	†500Ω	14KΩ	†20KΩ	TOP CAP †7.5KΩ
V 23	5V4G	†85KΩ	†7.5KΩ	†85Ω	†95Ω	†95Ω	†95Ω	†300Ω	†7.5KΩ	
V 24	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †7.5KΩ
V 25	6AL5	22KΩ	5KΩ	2.5Ω	.1Ω	22KΩ	Inf.	5KΩ		
V 26	5U4G	0Ω	8KΩ	5.5Ω	15Ω	4KΩ	16Ω	6KΩ	8KΩ	
V 27	5U4G	Inf.	8KΩ	8KΩ	15Ω	5.5Ω	16Ω	8KΩ	8KΩ	
V 28	6X4	9KΩ	Inf.	0Ω	.1Ω	8.5KΩ	9KΩ	6Ω		
V 29	6X4	9KΩ	Inf.	0Ω	.1Ω	Inf.	9KΩ	6Ω		
V 30	12QP4	0Ω	800KΩ	PIN 10 †80Ω	PIN 11 70KΩ	PIN 12 .1Ω				

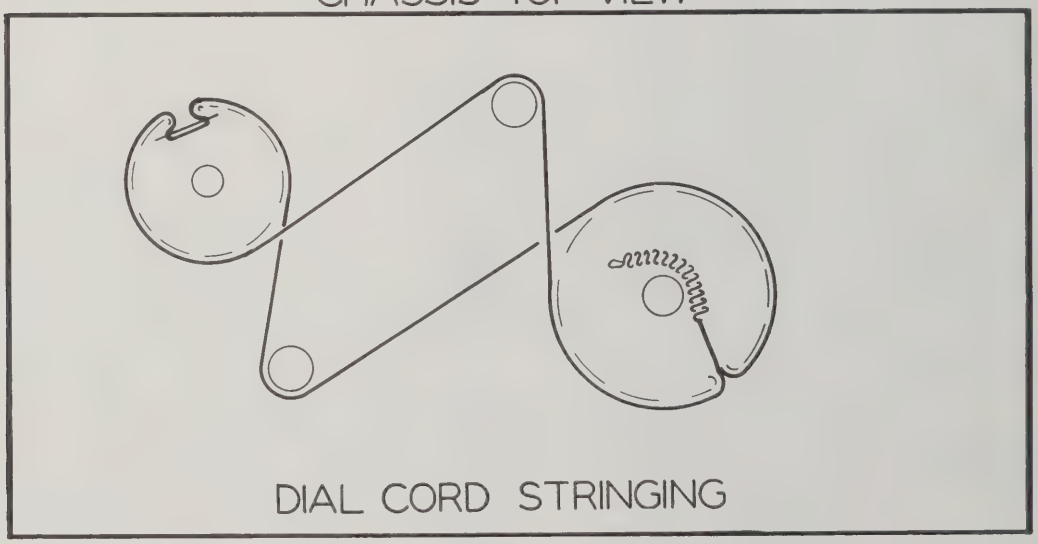
NOTE : RELAY MUST BE CLOSED FOR ALL B+ RESISTANCE MEASUREMENTS.

† MEASURED FROM PIN 8 OF V26.
‡ TAKEN IN "FM" POSITION.
¶ MEASURED FROM PIN 6 OF V15.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



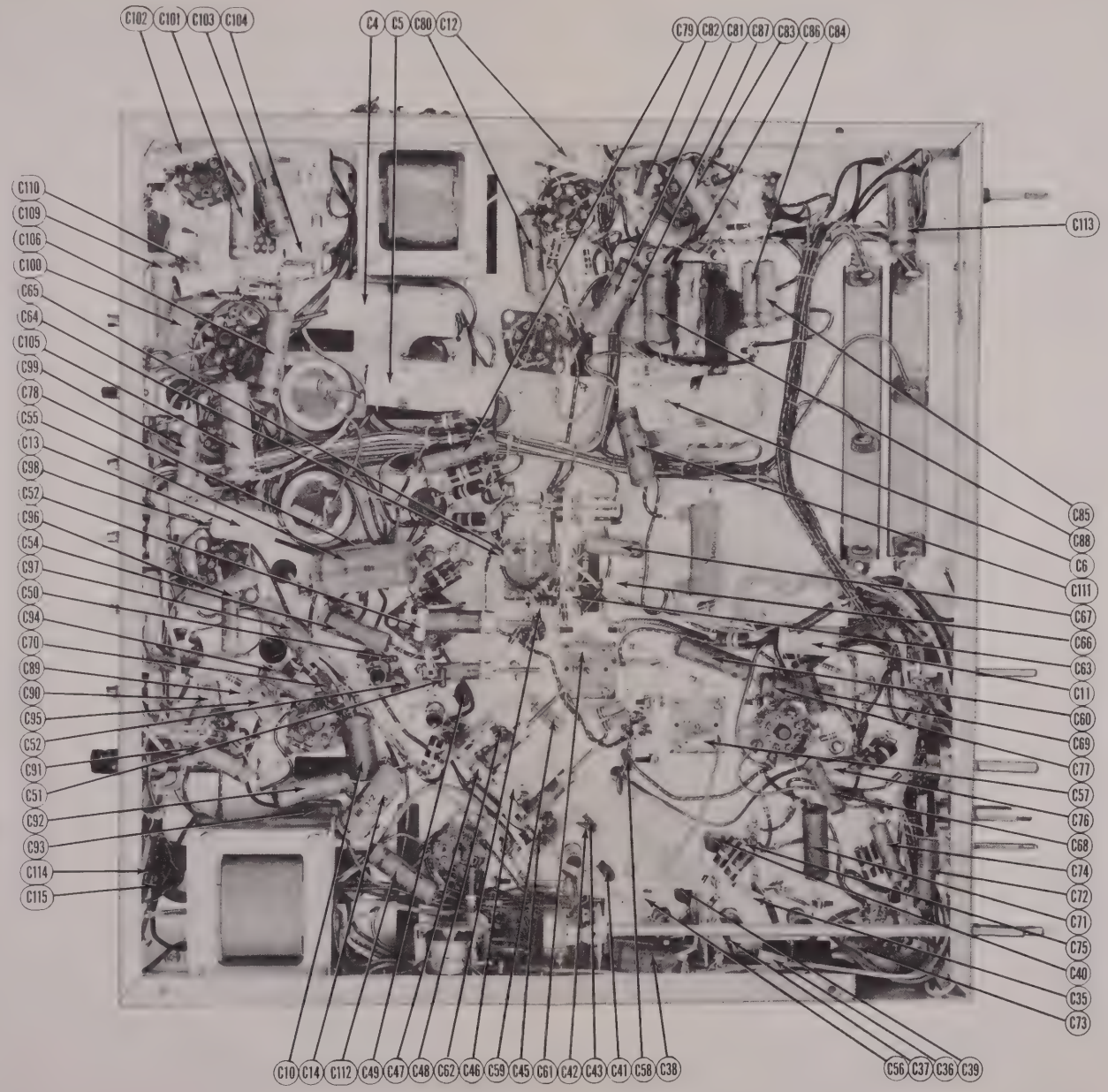
CHASSIS-TOP VIEW



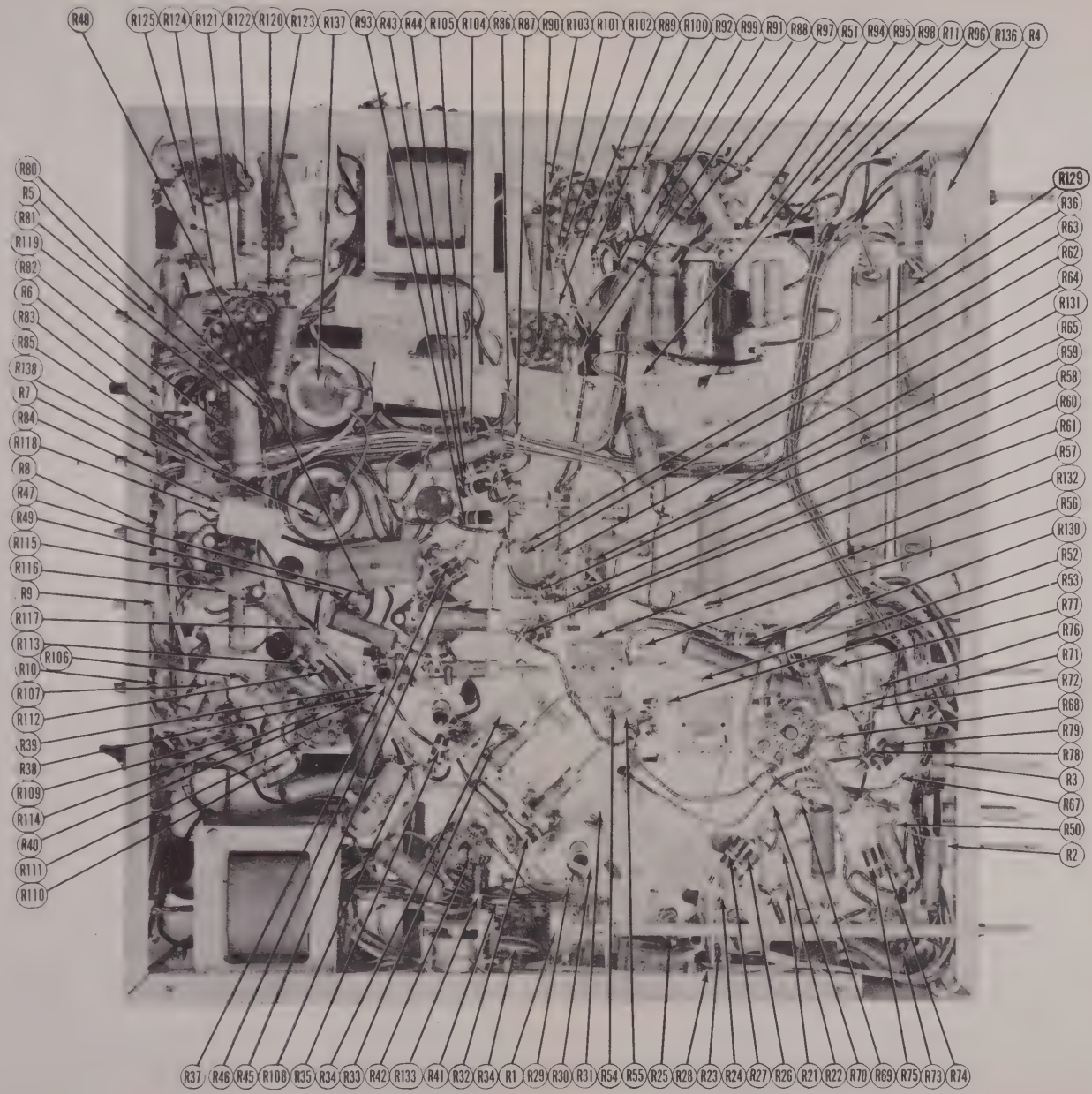
DIAL CORD STRINGING

DISASSEMBLY INSTRUCTIONS

1. Loosen screw holding Vernier tuning knob. Remove knob.
2. Loosen two screws holding fast tuning knob. Remove knob.
3. Remove five push-on type control knobs. (NOTE: To remove "Local-Distant" lever, line up shaft of contrast control first).
4. Remove seven phillips head screws holding rear cover. Open cover.
5. Disconnect speaker plug.
6. Remove four 7/16" hex head bolts holding chassis. Remove chassis.
7. Remove four 11/32" hex nuts holding speaker. Remove speaker.



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp	25000190	6J6	7BF	
V2	Mixer	25000180	6AK5	7BD	
V3A	Oscillator	25001760	6AB4	5CE	
B	Oscillator	25000190	6J6	7BF	
V4	1st Video IF	25000010	6AG5	7BD	
V5	2nd Video IF	25000010	6AG5	7BD	
V6	3rd Video IF	25000010	6AG5	7BD	
V7	Video Det.-DC Restorer	25000020	6AL5	6BT	
V8	Video Output	25000580	6AG7	8Y	
V9	Sound IF	25000050	6AU6	7BK	
V10	Limiter	25000050	6AU6	7BK	
V11	Disc.	25000020	6AL5	6BT	
V12	Tuning Indicator	25000200	6AL7GT	8CH	
V13	AF Amp.	25000270	6SJ7	8N	
V14	Audio Output	25000090	6V6GT	7AC	
V15	1st Sync. Clipper - Hor. Disch.	25000110	6SN7GT	8BD	
V16	2nd Sync. Clipper		6SJ7	8N	
V17	Vert. Buffer-Vert. Osc.-Vert. Disch.	25000110	6SN7GT	8BD	
V18	Vert. Amp.	25000110	6SN7GT	8BD	
V19	Hor. Sync. Disc.	25000020	6AL5	6BT	
V20	Hor. AFC	25000120	6AC7	8N	
V21	Hor. Osc.	25000100	6K6GT	7S	
V22	Hor. Output	25000140	6BG6G	5BT	
V23	Damper	25000160	5V4G	5L	
V24	HV Rectifier	25000150	1B3GT	3C	
V25	Time Delay Rect.	25000020	6AL5	6BT	
V26	LV Rectifier	25000060	5U4G	5T	
V27	LV Rectifier	25000060	5U4G	5T	
V28	Bias Rectifier	25000170	6X4	5BS	
V29	Bias Rectifier	25000170	6X4	5BS	
V30A	Picture Tube	25000330	12QP4	12D	
B	Picture Tube	25000870	19AP4	12D	Model RA110A
C	Picture Tube	25001560	15DP4	12D	Model RA104A

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	80	350	03016620	AFN16H			TVL-5	Filter
C2	80	350	03016620	AFN16H			TVL-5	Filter
C3A	40	475	03016050	AF8X8I			TVL-20	▲ Filter
B	40	400						▲ Filter
C4	1.5Ω Ⓐ							
	120 ∿	6	03016851	PRS6/1000			TVA-2	Hor. Cent. Cont. Bypass
C5	1.5Ω Ⓐ							
	120 ∿	6	03016851	PRS6/1000			TVA-2	Hor. Cent. Cont. Bypass
C6	2000	6	03012250	PRS6/2000			TVA-2	Vert. Cent. Cont. Bypass
C7A	10	350	03016900	AF2222J			EL-410	▲ V. Amp. Screen Bypass
B	10	350						■ Vert. Buffer Dec.
C	10	300						▲ Decoupling
C8A	30	450	03014110	AF66J			TVL-69	▲ Decoupling
B	10	450						▲ Decoupling
C9A	70	175	03016040	E29D7			D14948	Filter-Red Dot
B	70	175						Filter-Red Dot
C10	25	25	03015310	PRS25/25			TVA-6	Bias Filter
C11	10	25	03016730	PRS25/10			TVA-5	Bias Filter
C12	25	50	03013890	PRS50/25			TVA-15	Vert. Output Cath. Bypass
C13	10	50	03014100	PRS50/10			TVA-14	1st Sync. Clipper Dec.
C14	50	25	03000020	PRS25/50			TVA-7	Filter
C15	30		03013070	SI30JNPO	D2-30	NPOL-30		RF Coupling
C16	100		03016700	GP100M	D6-101	GP1K-100		RF Cathode Bypass
C17	470		03016470	GP470M	D6-471	GP2K-470		RF Filament Bypass
C18	470		03016470	GP470M	D6-471	GP2K-470		RF Bypass
C19	100		03016700	GP100M	D6-101	GP1K-100		RF Coupling
C20	.5-5		03016650			532-.5-5		Variable Trimmer
C21	.5-5		03016650			532-.5-5		Variable Trimmer
C22	100		03016700	GP100M	D6-101	GP1K-100		Fixed Trimmer
C23	130		03016660					Fixed Trimmer
C24	15		03014580	CI15JNPO	D6-150	GP1K-15		Fixed Trimmer
C25	100		03016700	GP100M	D6-101	GP1K-100		RF Coupling
C26	470		03016470	GP470M	D6-471	GP2K-470		Bias Filter
C27	10000		03016770	BPD-10	D6-103	821-01	36C1	Mixer Screen Bypass
C28	470		03016470	GP470M	D6-471	GP2K-470		Mixer Filament Bypass
C29	1		03012150		D2-1			Osc. Coupling
C30	5		03016860	CN5JN150		N150K-5		Osc. Grid Cap.
C31	1.5-7		03016870			TS2A-N300 -1.5-7		Variable Trimmer
C32	470		03016470	GP470M	D6-471	GP2K-470		Osc. Filament Bypass
C33	470		03016470	GP470M	D6-471	GP2K-470		RF Bypass
C34	470		03016470	GP470M	D6-470	GP2K-470		Filament Bypass
C35	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	Mixer Plate Decoupling
C36	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	IF Coupling
C37	5000		03015610	BPD-5	D6-502	811-005	29C1	Bias Filter
C38	.25	200		P488-25			TC-2	Bias Filter
C39	5000		03015610	BPD-5	D6-502	811-005	29C1	1st V. IF Decoupling
C40	5000		03015610	BPD-5	D6-502	811-005	29C1	RF Bypass
C41	5000		03015610	BPD-5	D6-502	811-005	29C1	Bias Filter
C42	5000		03015610	BPD-5	D6-502	811-005	29C1	2nd V. IF Cathode Bypass
C43	5000		03015610	BPD-5	D6-502	811-005	29C1	2nd V. IF Decoupling
C44	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass *
C45	20		03014010	CI20KNPO	D2-20	NPOK-20	MS-42	Fixed Trimmer
C46	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	IF Coupling
C47	10		03013080	CI10FNPO	D2-10	NPOK-10	MS-41	Fixed Trimmer
C48	5000		03015610	BPD-5	D6-502	811-005	29C1	3rd V. IF Cath. Bypass
C49	5000		03015610	BPD-5	D6-502	811-005	29C1	3rd V. IF Decoupling
C50	2.5		03014570	CI2.5CNPO	D2-2.2	NPOK-2.5		IF Coupling

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA DUMONT PART No	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	20		03013800	S120KNPO	D2-20	NPOK-20	MS-42	Fixed Trimmer
C52	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	Bias Filter
C53	47		03012730	C147KNPO	D2-47	NPOM-47	MS-45	Fixed Trimmer
C54	05	400	03014020	P488-05			TM-15	Video Coupling
C55	5	400	03014269	P488-5			TC-5	Video Coupling
C56	2 5		03014570	C12.5CNPO	D2-2.2	NPOK-2.5		S. IF Coupling
C57	1000		[illegible]	GP1000M	D6-102	GP2L-001	1FM-21	AVC Filter
C58	5000		[illegible]	BPD-5	D6-502	811-005	29C1	1st S. IF Fil. Bypass
C59	1500	500	03033760	1467-0015	D6-152	GP2L-0015	1FM-215	1st S. IF Decoupling
C60	1	200	03013910	P288-1			TM-1	AVC Filter
C61	47		03014200	GP47K	D6-470	GP1K-47	1FM-45	Limiter Grid Filter
C62	1000		[illegible]	GP1000M	D6-102	GP2L-001	1FM-21	Limiter Screen Bypass
C63	1000		[illegible]	GP1000M	D6-102	GP2L-001	1FM-21	Limiter Decoupling
C64	47		[illegible]	GP47M	D6-470	GP1K-47	1FM-45	RF Bypass
C65	47		03014200	GP47M	D6- 470	GP1K-47	1FM-45	RF Bypass
C66	1000		[illegible]	GP1000M	D6-102	GP2L-001	1FM-21	De-emphasis
C67	01	400	[illegible]	P488-01	D6-103	821-01	TM-11	Tuning Ind. Filter
C68	01	400	03001450	P488-01	D6-103	821-01	TM-11	Tone Compensation
C69	02	400	[illegible]	P488-02			TM-12	Audio Coupling
C70	5000		[illegible]	BPD-5	D6-502	811-005	29C1	RF Bypass
C71	1	400	03014040	P488-1			TM-1	AF Amp. Screen Bypass
C72	05	400	03014020	P488-05			TM-15	Audio Coupling
C73	.002	600	03014430	[illegible]	D6-202	GP2M-002	TM-22	Output Grid Filter †
C74	.005	600	03001570	P688-005	D6-502	811-005	TM-25	Output Plate Bypass
C75	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	Output Decoupling
C76	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C77	1	200	[illegible]	P288-1			TM-1	Bias Filter
C78	01	400	[illegible]	P488-01	D6-103	821-01	TM-11	Sync. Coupling
C79	05	200	[illegible]	P288-05			TM-15	Sync. Coupling
C80	.1	200	03013910	P288-1			TM-1	Sync. Clipper Screen Bypass
C81	1	400	[illegible]	P488-1			TM-1	Vert. Sync. Coupling
C82	82	500	03017430					Vert. Sync. Feedback
C83	1	200	[illegible]	P288-1			TM-1	Vert. Sync. Coupling
C84	.005	600	03001570	P688-005	D6-502	811-005	TM-25	Integrator Net.
C85	01	400	03001450	P488-01	D6-103	821-01	TM-11	Integrator Net.
C86	01	400	[illegible]	P488-01	D6-103	821-01	TM-11	Vert. Osc. Grid Cap.
C87	1	400	[illegible]	P488-1			TM-1	Vert. Discharge
C88	1	400	03014040	P488-1			TM-1	Vert. Sweep Coupling
C89	47		03013950	C147KNPO	D6-470	GP1K-47	1FM-45	Hor. Sync. Coupling
C90	01	400	[illegible]	P488-01	D6-103	821-01	TM-11	Fixed Trimmer
C91	.005	600	[illegible]	[illegible]	D6-502	811-005	TM-25	AFC Filter
C92	1	200	03013910	P288-1			TM-1	AFC Filter
C93	05	200	[illegible]	P288-05			TM-15	Hor. AFC Screen Bypass
C94	005	600	03001570	[illegible]	D6-502	811-005	TM-25	Hor. AFC Coupling
C95	10000	300	[illegible]	1467-01	D6-103		1FM-11	Phase Shifter
C96	005	600	03001570	P688-005		811-005	TM-25	Hor. Osc. Grid Cap.
C97	05	400	[illegible]	P488-05			TM-15	Hor. Osc. Screen Bypass
C98	330	500	03020180		D6-331	GP2K-330		Differentiator Net.
C99	01	400	03001450	P488-01	D6-103	821-01	TM-11	Hor. Sweep Coupling
C100	2200	500	[illegible]		D6-222	GP2M-0022		Hor. Discharge
C101	01	600	[illegible]	P688-01	D6-103	821-01	TM-11	Hor. Sweep Coupling
C102	05	400	03014020	P488-05			TM-15	Hor. Output Screen Bypass
C103	1	200	03013910	P288-1			TM-1	Hor. Output Cathode Bypass
C104	1000		03013940	GP1000M	D6-102	GP2L-001	1FM-21	RF Bypass
C105	05	1000	03004070	pl088-05			TR-15	Damper Filter
C106	035	1000	03004060	pl088-033				Damper Filter
C107	220	1500	03004740					Fixed Trimmer
C108	500	10000	03014410	HV-500		410-500		HV Filter †
C109	.1	200	03013910	P288-1			TM-1	Pic. Tube Cathode Decoupling
C110	.01	600	[illegible]	P688-01	D6-103		TM-11	Acc. Anode Bypass
C111	1	400	[illegible]	P488-1			TM-1	Bias Filter
C112	1	200	[illegible]	P288-1			TM-1	Bias Filter
C113	1	400	[illegible]	P488-1			TM-1	RF Bypass
C114	05	600	[illegible]	P688-05			TM-15	Line Filter
C115	05	600	03006500	P688-05			TM-15	Line Filter

* Not used in all models.
† Not used in model RA-110A

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No	CLAROSTAT PART No	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Switch		03003671				Local-Distance Switch
B	25KΩ	½	01025202				Contrast Control
R2	200KΩ	½	01012820	Q11-128	M-49-S	B-40	Brightness Control
R3A	500KΩ	½	01010800	Q19-133X	T-90	BT-65-S	Volume Control, tapped@ 200K
B	Switch		Not Req.	76-1	SW-A	*	Attach to R3A per Instructions
R4	1000Ω	25	01006680	PR-25-1000	PW-25-1000		Focus Control-Wire Wound
R5	20KΩ	½	01007650	Q11-119	M-36-S	B-22	Horiz. Drive Control
R6	500KΩ	½	01007740	Q11-133	M-58-S	B-59	Vert. Hold Control
R7	4 Meg.	½	01006570	Q11-141	M-85-S	B-86	Vert. Size Control
R8	2500Ω	2	01006640	W-2000	43-2500	V-131	Vert. Linearity Control-Wire Wound
R9	25Ω	4	01006660		10-25		Horiz. Centering Control-Wire Wound
R10	25Ω	2	01006630	W-25	43-25	V-111	Vert. Centering Control-Wire Wound
R11	500KΩ	½	01006710	Q11-133	M-58-S	B-59	Sensitivity Control

* Switch is attached at factory.

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
					ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R12	100Ω ±%	½	02030240		RF Cathode
R13	20KΩ	2	02033690		RF Plate
R14	10KΩ	½	02033890		RF Plate Coil Shunt
R15	6200Ω	½	02031880		Mixer Grid Coil Shunt
R16	1 Meg	½	02032130		Mixer Grid
R17	150KΩ	½	02032030		Mixer Screen
R18	100KΩ	½	02032210		Bias Network
R19	12KΩ	½	02031900		Osc. Grid
R20	10KΩ	2	02037890		Osc. Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R21	8200Ω 5%	½	02030700	BTS-8200-5%	Mixer Plate Transformer Shunt
R22	47KΩ	½	02031970	BTS-47K	Mixer Plate Decoupling
R23	5600Ω 5%	½	02030660		1st Video IF Grid
R24	68Ω	½	02031830		1st Video IF Cathode
R25	6800Ω 5%	½	02030680	BTS-6800-5%	1st Video IF Coil Shunt
R26	22KΩ	2	02037930		1st Video IF Decoupling
R27	22KΩ	2	02037930		1st Video IF Decoupling
R28	1 Meg. 20%	½	02032600	BTS-1 Meg.	Bias Network
R29	10KΩ	½	02031890	BTS-10K	Bias Network
R30	6800Ω 5%	½	02030680	BTS-6800-5%	2nd Video IF Coil Shunt
R31	68Ω	½	02031630		2nd Video IF Cathode
R32	3900Ω	2	02037840		2nd Video IF Decoupling
R33	3900Ω 5%	½	02030620	BTS-3900-5%	IF Trap Coil Shunt
R34	100Ω	½	02031650		3rd Video IF Cathode
R35	3900Ω	2	02037840		3rd Video IF Decoupling
R36A	7000Ω	7	02018990	AB-7000	Bleeder-Wire Wound
B	2500Ω	9.6		AB-2500	Filter-Wire Wound
R37	39KΩ 5%	½	02030860	BTS-39K-5%	4th Video IF Coil Shunt
R38	39KΩ 5%	½	02030860	BTS-39K-5%	4th Video IF Coil Shunt
R39	4700Ω 5%	½	02030640	BTS-4700-5%	Video Det. Diode Load
R40	12KΩ	½	02031900	BTS-12K	Voltage Divider
R41	27KΩ	½	02031940	BTS-27K	Bias Network
R42	8200Ω 5%	½	02030700	BTS-8200-5%	Bias Network
R43	100KΩ	2	02038010	BT-2-100K	Video Output Screen
R44	100KΩ	2	02038010	BT-2-100K	Video Output Screen
R45	6800Ω	2	02037870	BT-2-6800	Video Output Plate
R46	6800Ω	2	02037870	BT-2-6800	Video Output Plate
R47	470KΩ	½	02032090	BTS-470K	Picture Tube Grid
R48	330KΩ	½	02032070	BTS-330K	Voltage Divider
R49	10KΩ	½	02031890	BTS-10K	DC Rest. Load
R50	220KΩ	½	02032050	BTS-220K	Voltage Divider
R51	470KΩ	½	02032090	BTS-470K	Voltage Divider
R52	100KΩ	½	02032010	BTS-100K	Sound IF Grid
R53	68Ω	½	02031630		Sound IF Cathode
R54	22KΩ	1	02034930	BTA-22K	Sound IF Decoupling
R55	22KΩ	1	02034930	BTA-22K	Sound IF Decoupling
R56	100KΩ	½	02032010	BTS-100K	Sound IF Grid Filter
R57	56KΩ	½	02031980	BTS-56K	Limiter Grid
R58	68Ω	2	02031630		Limiter Cathode
R59	47KΩ	2	02037970		Limiter Screen
R60	1000Ω	½	02031770	BTS-1000	Limiter Decoupling
R61	10KΩ	½	02031890	BTS-10K	Voltage Divider
R62	100KΩ	½	02032010	BTS-100K	Disc. Diode Load
R63	100KΩ	½	02032010	BTS-100K	Disc. Diode Load
R64	27KΩ	½	02031940	BTS-27K	De-emphasis
R65	1 Meg.	½	02032130	BTS-1 Meg.	Tuning Ind. Network
R66	3300Ω	½	02031830	BTS-3300	Tuning Ind. Grid
R67	22KΩ	½	02031930	BTS-22K	Tone Compensation
R68	470KΩ	½	02032090	BTS-470K	AF Amp. Grid
R69	1 Meg.	½	02032130	BTS-1 Meg.	AF Amp. Screen
R70	100KΩ	½	02032010	BTS-100K	AF Amp. Plate
R71	100KΩ	½	02032010	BTS-100K	Voltage Divider
R72	470KΩ	½	02032090	BTS-470K	Bias Network
R73	100KΩ	½	02032010	BTS-100K	Output Grid
R74	2200Ω	2	02037810	BT-2-2200	Output Decoupling
R75	2200Ω	2	02037810	BT-2-2200	Output Decoupling
R76	16KΩ 5%	½	02030770		Bias Network
R77	2000Ω 5%	½	02030550		Voltage Divider
R78	8200Ω	2	02037880	BT-2-8200	Voltage Dropping
R79	8200Ω	2	02037880	BT-2-8200	Voltage Dropping
R80	22KΩ	½	02031930	BTS-22K	Bias Network
R81	22KΩ	½	02031930	BTS-22K	Bias Network
R82	39KΩ	½	02031960	BTS-39K	1st Sync. Clipper Grid
R83	3300Ω	½	02031830	BTS-3300	1st Sync. Clipper Plate
R84	33KΩ	2	02037950	BT-2-33K	1st Sync. Clipper Plate Decoupling
R85	6800Ω	½	02031870	BTS-6800	Voltage Divider
R86	27KΩ	½	02031940	BTS-27K	2nd Sync. Clipper Grid
R87	1.2 Meg.		02032140	BTS-1.2 Meg.	2nd Sync. Clipper Grid
R88	10KΩ	½	02031890	BTS-10K	2nd Sync. Clipper Plate
R89	100KΩ	1	02035010	BTA-100K	2nd Sync. Clipper Screen
R90	22KΩ	½	02031930	BTS-22K	Voltage Divider
R91	1 Meg.	½	02032130	BTS-1 Meg.	Vert. Buffer Grid
R92	5600Ω	½	02031860	BTS-5600	Vert. Buffer Plate
R93	27KΩ	2	02037940	BT-2-27K	Vert. Buffer Decoupling
R94	22KΩ	½	02031930	BTS-22K	Integrator Network
R95	10KΩ	½	02031890	BTS-10K	Integrator Network
R96	10KΩ	½	02031890	BTS-10K	Integrator Network
R97	470KΩ	½	02032090	BTS-470K	Vert. Osc. Grid
R98	470KΩ	½	02032090	BTS-470K	Vert. Osc. Plate
R99	3300Ω	½	02031830	BTS-3300	Vert. Peaking
R100	1800Ω	½	02031800	BTS-1800	Vert. Peaking
R101	4700Ω 5%	½	02030640	BTS-4700-5%	Vert. Peaking
R102	820Ω	1	02034760	BTA-820	Vert. Amp. Cathode
R103	2.2 Meg.	½	02032170	BTS-2.2 Meg.	Vert. Amp. Grid
R104	10KΩ	2	02037890	BT-2-10K	Decoupling
R105	10KΩ	2	02037890	BT-2-10K	Decoupling
R106	470KΩ	½	02032090	BTS-470K	Horiz. Sync. Disc. Load
R107	470KΩ	½	02032090	BTS-470K	Horiz. Sync. Disc. Load
R108	220Ω 5%	½	02030320	BW-½-220-5%	Voltage Divider
R109	470KΩ	½	02032090	BTS-470K	Horiz. AFC Filter
R110	470Ω	½	02031730	BTS-470	Horiz. AFC Grid
R111	10Ω	½	02031530		Horiz. AFC Cathode
R112	22KΩ	2	02037930	BT-2-22K	Horiz. AFC Plate
R113	47KΩ	2	02037970	BT-2-47K	Horiz. AFC Screen
R114	27KΩ	1	02034940	BTA-27K	Voltage Divider
R115	47KΩ	½	02031970	BTS-47K	Horiz. Osc. Grid
R116	5000Ω	5	02107960	AB-5000	Horiz. Osc. Plate-Wire Wound
R117	10KΩ	1	02034890	BTA-10K	Horiz. Osc. Screen
R118	6800Ω	½	02031870	BTS-6800	Differentiator
R119	220KΩ	2	02032050	BTS-220K	Horiz. Discharge Grid
R120	180KΩ	2	02038040	BT-2-180K	Horiz. Discharge Plate
R121	2200Ω	½	02031810	BTS-2200	Horiz. Peaking
R122	100Ω	½	02031650		Parasitic Supp.
R123	1 Meg.	½	02032130	BTS-1 Meg.	Horiz. Output Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT PART No.	IRC PART No.	IDENTIFICATION CODES
R124	100Ω	5	02109220	AB-100	Horiz. Output Cathode-Wire Wound
R125	20KΩ	10	02108100	AB-20, 000	Horiz. Output Screen-Wire Wound
R126	8500	25	02018981		Damper Filter-Wire Wound-See Note 1
R127	3.6Ω	½	02100780		HV Rect. Filament-Wire Wound-See Note 4
R128	220KΩ	1	02035050		HV Filter
R129A	200Ω	15	02017600	DG-200	Series Focus Coil-Wire Wound
B	250Ω	10		AB-250	Focus Coil Shunt-Wire Wound
R130	150KΩ	2	02038030	BT-2-150K	Voltage Divider
R131	1150Ω	20	02100040		Bias Filter-Wire Wound
R132	22KΩ	½	02031930	BTS-22K	Bias Filter- See Note 2 and 3
R133	5.1Ω	1	02102650		Time Delay Rect. Filament-Wire Wound
R134	12KΩ 5%	2	02036740	BT-2-12K-5%	Bias Network
R135	250Ω	5	02107140	AB-250	Bias Filter-Wire Wound
R136	1280Ω	25	02017610		Filter-Wire Wound
R137	100KΩ	1	02035010	BTA-100K	Bleeder
R138	100KΩ	1	02035010	BTA-100K	Bleeder

Note 1. This resistor is tapped at 7500Ω and 5500Ω.
Note 2. Some models use 27KΩ resistor in this application.
Note 3. Model RA-110A uses 50KΩ fixed resistor in this application.
Note 4. Model RA-110A uses 7.5Ω fixed resistor in this application.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA DUMONT PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1A	PM	3.4Ω	18002761① ③	MOD. P6-V⑤	6A1 ⑤	② Used in Sheffield model RA-103D
B	PM		②	ST-119	10A31 ⑤	① Used in Rumson model RA-103D
				MOD. P10-T⑤		③ Used in model RA-104A
C	PM		④	ST-119	10A31 ⑤	④ Used in model RA-110A
				MOD. P10-T⑤		⑤ Remount output transformer
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"	① ③			
B	10"		②			
C	10"		④			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.8A	760VCT .290ADC & 290 VCT @ .103ADC	5VAC @ 6A	5VAC @ 2A	20004283			
		SEC. 4	SEC. 5					
		6.3VAC @ 1.5A	6.3VAC @ 9.4A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	280Ω	590Ω	20004142				Vert. Block Osc. Trans.
		SEC. 2 730Ω					
T3A	520Ω	SEC. 1	20004261①②③	A-8128	HVO-3	TFB-3	Hor. Output Trans.
	Tap@ 180Ω	8Ω Tap @ .1Ω					
B			20004521 ④				Hor. Output Trans.
T4	600Ω	6Ω	20003944	A-8115	A-3035	TSO-1	Vert. Output Trans.
T5A	12.5Ω		21004242①②	DY-1	MD-1		Hor. Deflection Coil
B	63Ω						Vert. Deflection Coil
T5			21004241 ③ ④				Vert.-Hor. Defl. Coils
T6A	550Ω		21004252① ③				Focus Coil
B			21004254② ④				Focus Coil

① Used in Rumson model RA-103D.
② Used in Sheffield model RA-103D.
③ Used in model RA-104A.
④ Used in model RA-110A

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.3KΩ	3.4Ω	410Ω	.5Ω	Part of 18002761	A-3849	A-2901	RO-201	

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DUMONT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.290A	80Ω	4.5 Henries	21004382	C-1703 ⑤	C-2991 ⑥	TR-3300⑥	⑤ Drill one new mounting hole.
L2	.103A	60Ω	1 Henry	21004722	C-2304 ⑤	C-2974 ⑥	TR-4200⑥	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

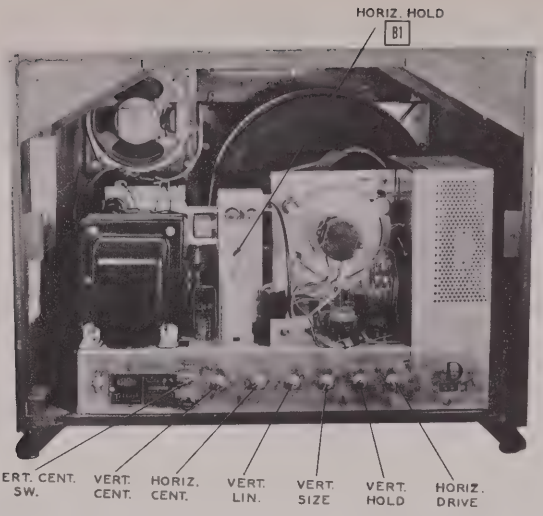
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L3	Ant. Coil	0Ω		21004571		
L4	Ant. Coil	0Ω		21004571		
L5	RF End Inductor	0Ω		21004931		
L6	RF Plate	0Ω				Part of inductuner . Part #21004691
L7	RF End Inductor	0Ω		21004921		
L8	Mixer Grid	0Ω				Part of inductuner. Part #21004961.
L9	Band Pass Coupling	0Ω		21004941		
L10	Band Width			21004601		Not used in all models.
L11	Ground Strap			21004951		Not used in all models.
L12	Osc. Shunt	0Ω		21004041		
L13	Osc. End Inductor	0Ω		21004891		
L14	Osc. Coil	0Ω				Part of Inductuner. Part #21004961
L15	Fil. Choke	.1Ω		21004571		
L16	1st Video IF	.8Ω		21004137		
L17	RF Choke	0Ω		21004421		
L18	1st Video IF Coupling	0Ω		21004136		
L19	2nd Video IF	.8Ω		21004137		
L20	2nd Video IF	0Ω		21004136		
L21	3rd Video IF	.8Ω		21004137		
L22	21.9 MC Sound Trap	0Ω		21004802		
L23	Adjacent Channel Sound Trap	0Ω		21004801		
L24	3rd Video IF	0Ω		21004136		
L25	4th Video IF	.8Ω		21004137		
L26	21.9MC Sound Trap	0Ω		21004802		
L27	4th Video IF	.8Ω		21004137		
L28	Peaking	19Ω		21004467		Yellow identification dot.
L29	Peaking	11Ω		21004461		Red identification dot.
L30	4.5MC Sound Trap	0Ω		21004121		
L31	Peaking	6Ω		21004464		
L32	Fil. Choke	.2Ω		21004961		
L33	1st SoundIF	0Ω	0Ω	20004101		Alternate Part #20004111
L34	2nd Sound IF	0Ω	0Ω	20004101		Alternate Part #20004111
L35	Disc. Trans.	.2Ω	0Ω	20003901		Alternate Part #20004091
L36	Horiz. Osc. Trans.	65Ω	63Ω	20004081		
L37	Width Cont.	.1Ω		21004761		Fixed
L38A	Width Cont.	.2Ω		21004741		Not used in RA-110A
B	Width Cont.			21005001		Used in model RA-110A only.
L39	Horis. Linearity	55Ω		21004771		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DUMONT PART No.		NOTES
M1	Bayonet	6-8	.25	Blue	12000840		Type #44
M2	Bayonet	6-8	.25	Blue	12000840		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M3	RF Tuner Assy.		
M4	Switch	05003431	Width
M5	Switch	05000120	Vert. Positioning Alternate Part #05003050
M6	Switch	05003321	Function
M7	Fuse	11001100	.25A., 250V
M8	Fuse	11000810	5A., 250V
M9	Relay	05002410	Alternate Part #05003260 and 05003060
M10	Ion Trap	21004472	
	Safety Glass	45000046	Model RA-103D
	Safety Glass	45000047	Model RA-104A
	Safety Glass	45001131	Model RA-110A
	Knob	45000021	Control } Model RA-103D
	Knob	45000022	Control } Model RA-103D
	Knob	45001001	Tuner } Model RA-103D
	Knob	45001011	Tuner } Model RA-103D
	Knob	45001001	Vernier Dial } Model RA-104A
	Knob	45001012	Main Dial } Model RA-104A
	Knob	45000091	Control } Model RA-104A
	Knob	45000092	Control } Model RA-104A
	Knob	45000021	Control, Mahogany
	Knob	45000091	Control, Blonde
	Knob	45000022	Control, Mahogany
	Knob	45000092	Control, Blonde
	Knob	45001001	Vernier Dial, Mahogany } Model RA-110A
	Knob	45001002	Vernier Dial, Blonde } Model RA-110A
	Knob	45001011	Main Dial, Mahogany } Model RA-110A
	Knob	45001012	Main Dial, Blonde } Model RA-110A
	Magnet	29000530	Magnet for 6BG6G



CABINET-REAR VIEW

HORIZONTAL SWEEP ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENTS

Rotate the horizontal frequency adjustment (B1) until the picture falls out of "sync." Adjust the control to bring the picture back into sync and note the position where this occurs. Repeat the above procedure but in the opposite direction. The correct setting is mid-way between the two points where picture falls into synchronization.

HORIZONTAL PHASING ADJUSTMENT

Reduce the picture width until both edges are visable. Turn up the brightness control and reduce the contrast control so the normally blanked out edges of the picture are visable. Adjust the phasing adjustment (B2) until the normally blanked edges of the raster are of equal width.

HORIZONTAL SIZE AND LINEARITY ADJUSTMENTS

There are two size adjustments, a coarse adjustment which is a switch on the side of the flyback power supply case, and a fine adjustment (B3). Set these two adjustments until picture fills the mask horizontally.

Adjust the horizontal drive control and horizontal linearity adjustment (B4) until the picture is linear in the horizontal plane.

VERTICAL SWEEP ADJUSTMENTS

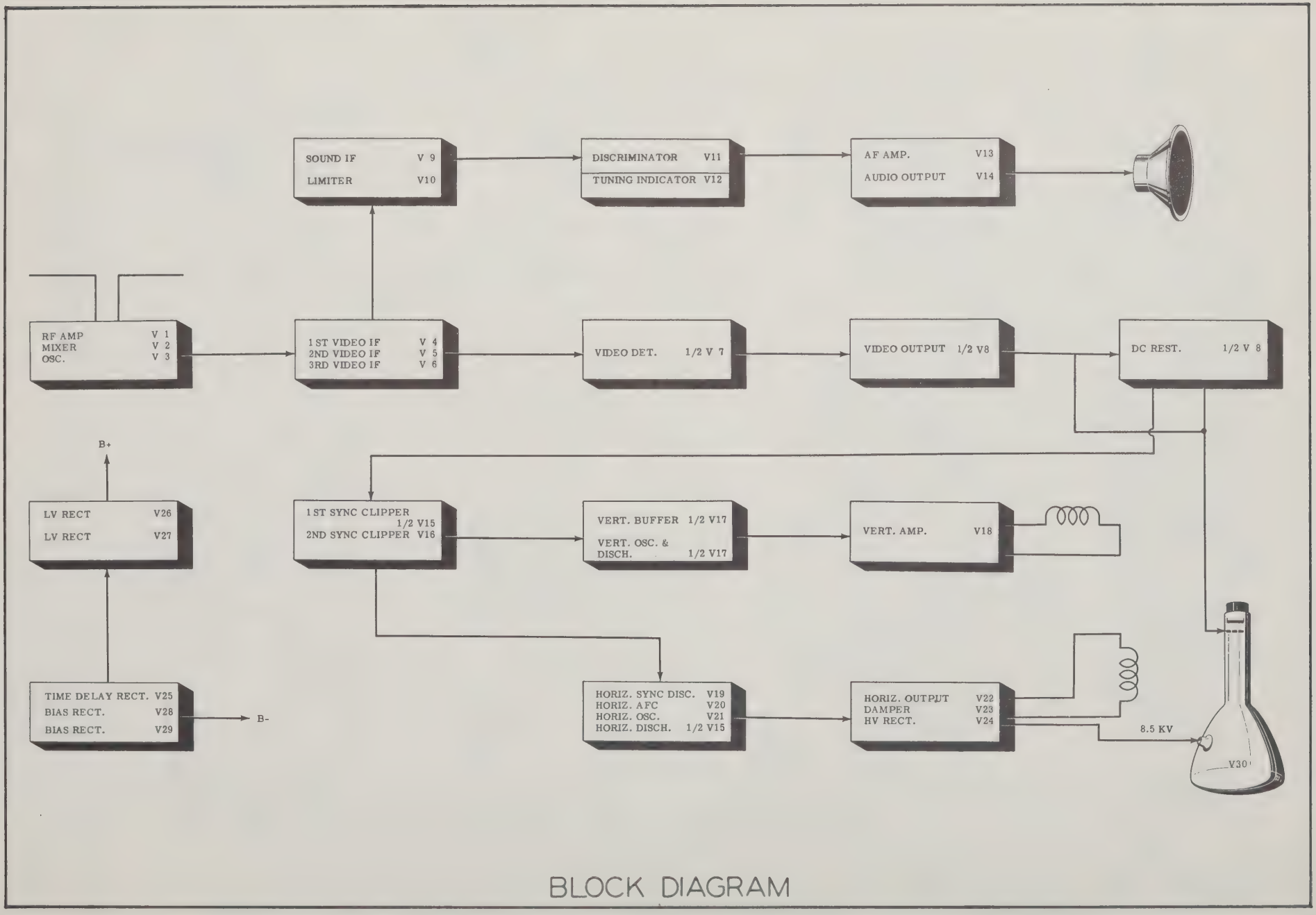
Rotate vertical hold control until picture falls out of sync. Adjust control until picture falls out of sync. Adjust control until picture falls back into sync and note this position. Repeat this procedure in opposite direction from above. Mid-way between these positions is the correct setting.

There are two vertical position controls; a coarse control switch on rear of the receiver main chassis, and a fine control adjacent to the switch. Adjust these two controls until the picture is properly centered vertically.

Adjust the vertical size control until picture fills the mask vertically. Adjust the vertical linearity control until picture is linear from top to bottom. Slight readjustment of vertical size control may be necessary.

PICTURE TUBE SENSITIVITY CONTROL ADJUSTMENT

If the picture tube is replaced, the picture tube sensitivity control (R12) should be adjusted as follows. Turn the contrast fully counter-clockwise. Adjust brightness control until DC voltmeter connected between brightness control arm and chassis reads 45 volts. Adjust the picture sensitivity control until raster on screen just disappears.



BLOCK DIAGRAM

EMERSON MODEL 640 (Ch. 120112) (BATTERY OPERATED)

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EMERSON MODEL 640

TRADE NAME	Emerson Model 640 (Ch. 120112)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 8th Ave., New York, New York
TYPE SET	Battery Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1U5 DET-AVC-AF, 3S4 Power Output
POWER SUPPLY	1.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	220MA @ 1.5 Volts DC and 9.6MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the raised dot near the low frequency end of the dial backplate.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6	"

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 640

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	800110	1R5	7AT	
V2	IF Amp.	800130	1T4	6AR	
V3	DET.-AVC-AF	800019	1U5	6BW	
V4	Power Output	800170	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	16	100	925164	SRE150/15		BBR16-90		RF Bypass
C2	.05	200	920494	P285-05			68P16	AVC Filter
C3	100		928013	GP100K	D6-101	GP1K-100	1FM-31	Osc. Grid Cap.
C4	.02	200	920120	P285-02			68P15	Decoupling
C5	250	500	928104	1468-00025	D6-251	GP2K-250	1FM-325	Diode RF Filter
C6	.001	200	920495	P285-001	D6-102	GP2L-001	68P1	Audio Coupling
C7	.01	200	920485	P285-01	D6-103	821-01	68P14	AF Amp. Screen Bypass
C8	100		928013	GP100M	D6-101	GP1K-100		AF Amp. Plate Bypass
C9	.001	200	920495	P285-001	D6-102	GP2L-001	68P1	Audio Coupling
C10	.005	200	920496	P285-005	D6-502	811-005	68P11	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	1 Meg.	½	390117	Q13-137	15/16-63-Z	BSK-70	Volume control

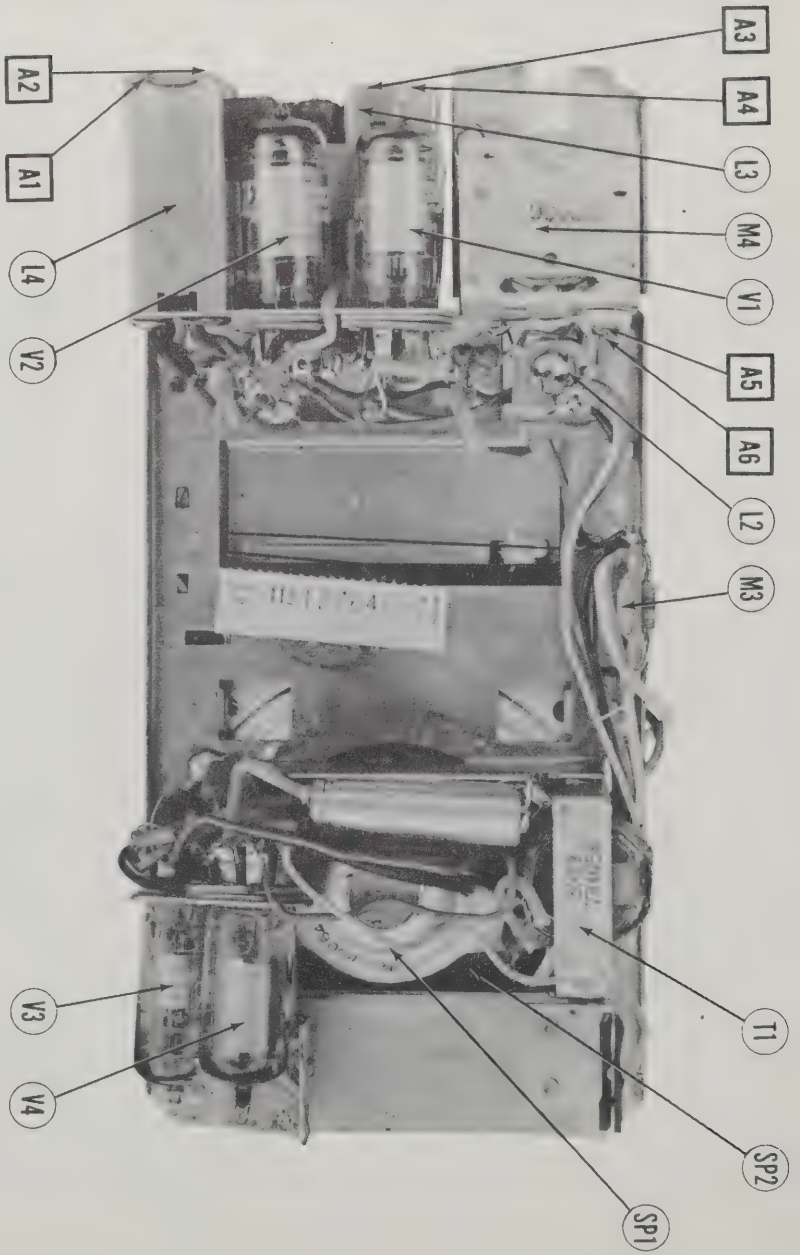
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	350970	BTS-100K	Osc. Grid
R3	10KΩ	½	340730	BTS-10K	Screen Dropping
R4	3.3 Meg.	½	351330	BTS-3.3 Meg.	AVC Network
R5	10 Meg.	½	351450	BTS-10 Meg.	AF Amp. Grid
R6	3.3 Meg.	½	351330	BTS-3.3 Meg.	AF Amp. Screen
R7	470KΩ	½	351130	BTS-470K	AF Amp. Plate
R8	3.3 Meg.	½	351330	BTS-3.3 Meg.	Output Grid
R9	820Ω	½	340470	BTS-820	Bias Network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	7KΩ	3.8Ω	358Ω	.44Ω	734056	A-3329 *	A-2922 *		* Bend one mounting tab down and file to fit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.8Ω	180064			
	CONE DIA.	V. C. DIA.				
SP2	3 3/8"	9/16"				

R F COILS

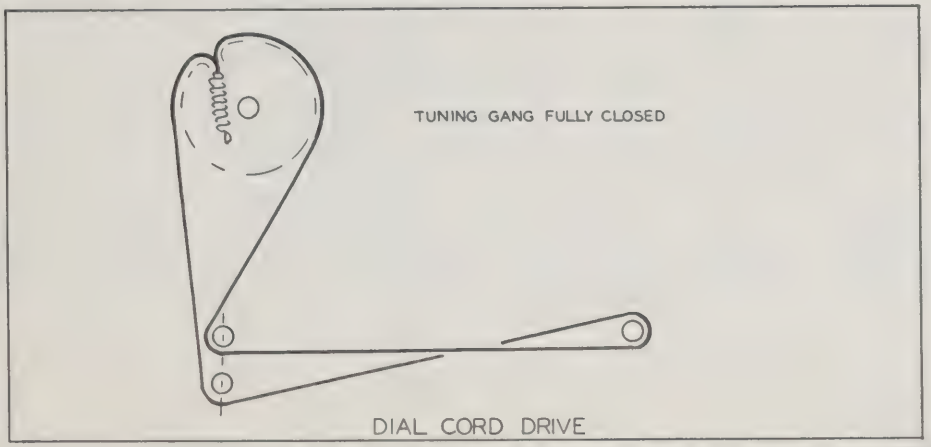
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	2.8Ω		700048	
L2	Osc. Coil	2Ω	8.1Ω	716047	14-1074
L3	1st IF	21.2Ω	18Ω	720111	16-6668
L4	2nd IF	21.2Ω	18Ω	720111	16-6669

BATTERIES

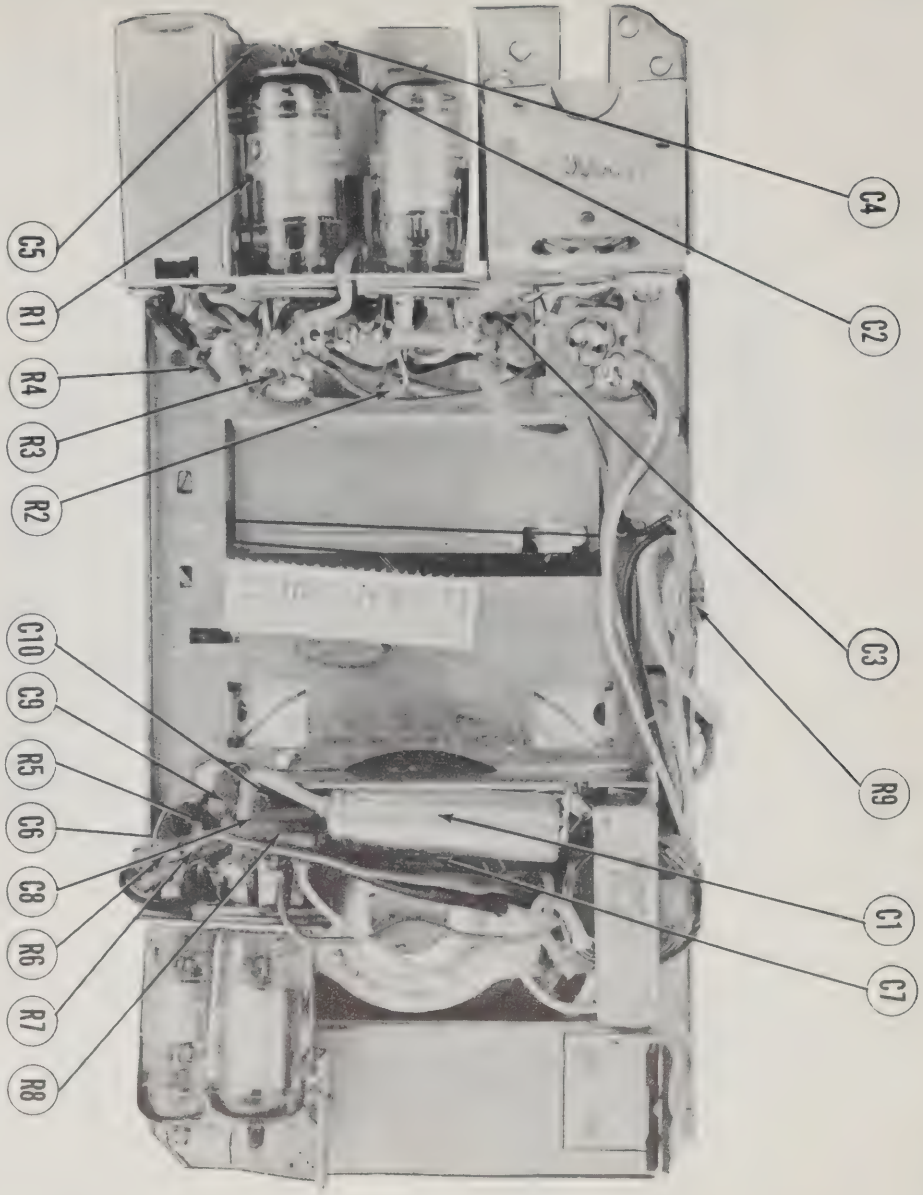
ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	1.5V "A"		950			2R			
M2	67.5V "B"			467			XX45		

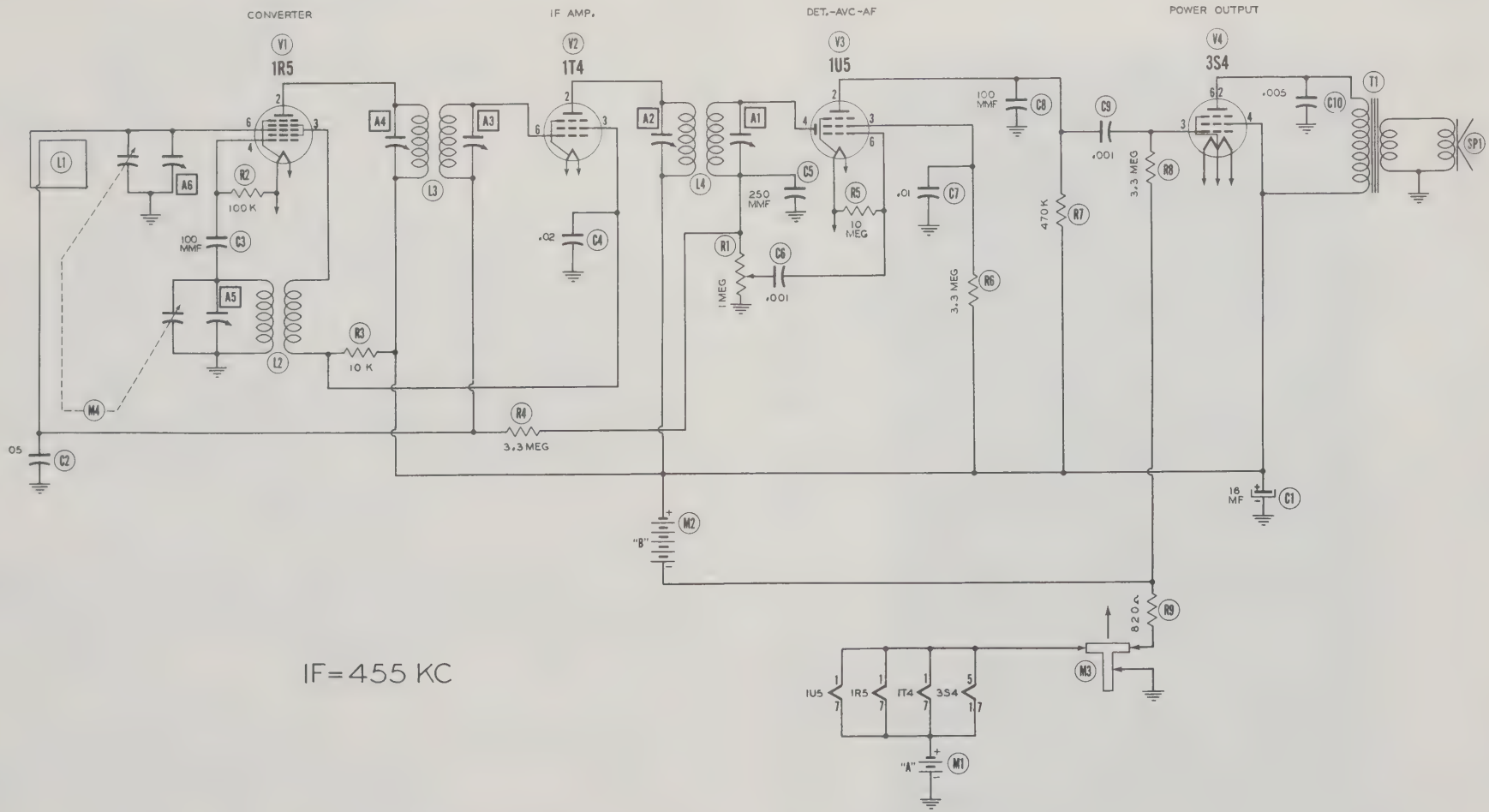
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Switch		On-Off
M4	2 Gang Var. Cap.	900068	(29-382MMF, 14-195MMF)
	Knob	460144	Sand
	Knob	460145	Saddle Tan
	Handle	460148	



CHASSIS—BOTTOM VIEW





IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V.	60VDC	40VDC	§-.4VDC	0V.	.1VDC	1.4VDC
V 2	1T4	0V.	60VDC	40VDC	0V.	0V.	.1VDC	1.4VDC
V 3	1U5	0V.	25VDC	17VDC	-.2VDC	60VDC	0V.	1.4VDC
V 4	3S4	1.4VDC	58VDC	-.7VDC	60VDC	0V.	58VDC	1.4VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†21Ω	†10KΩ	100KΩ	*	4.3 Meg.	*
V 2	1T4	*	†21Ω	†10KΩ	4 Meg.	*	4.3 Meg.	*
V 3	1U5	*	†470KΩ	†3.3 Meg.	1 Meg.	†0Ω	10 Meg.	*
V 4	3S4	*	†358Ω	3.3 Meg.	†0Ω	†0Ω*	†358Ω	*

† MEASURED FROM PIN 4 OF V4.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

GMC MODEL 2233029

TRADE NAME	GMC, Model 2233029
SUPPLIER	General Motors Corp., Detroit, Michigan
TYPE SET	Battery Operated Custom Built Truck Superheterodyne Receiver
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 DET-AVC-AF, 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 7.6 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7 (V2). Low side to chassis.	262KC (400 ∿ Mod.)	Turn pointer to the high-frequency end of the dial.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	70MMF	High side thru dummy to antenna connector. Low side to chassis.	1615KC	"	"	A5, A6, A7	Check the position of the oscillator coil slug. The rear of the slug should be 1 3/4 inches from the mounting end of the coil.
3.	70MMF	"	1400KC	Tune for max. output	"	A8, A9	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement can be made.
4.	70MMF	"	600KC	"	"		Set pointer to 600KC by means of the adjustment screw located on the pointer connecting link.

After set is installed, fully extend antenna and tune in a weak station near 1400KC. Adjust A7 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GMC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7	6SK7	8N	
V2	Converter	6SA7	6SA7	8R	
V3	IF Amp.	6SK7	6SK7	8N	
V4	DET. -AVC-AF	6SQ7	6SQ7	8Q	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GMC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	7240724	AF44J4A			EL-322	■ Filter
B	20	400						▲ Filter
C	20	25						Output Cathode Bypass
C2	.05	400	7230592	P488-05			TM-15	Decoupling
C3	.001	600	1217790	P688-001	D6-102	GP2L-001	TM-21	RF Coupling
C4	160		7256276					Fixed Trimmer
C5	.05	200	7230592	P288-05			TM-15	AVC Filter
C6	.005	600	7230767	P688-005	D6-502	811-005	TM-25	Audio Coupling
C7	.05	400	7230592	P488-05			TM-15	Tone Compensation
C8	.005	600	7232956	P688-005	D6-502	811-005	TM-25	Tone Compensation
C9	.00075	400	7240738	1468-00075	D6-751	GP2K-750	1FM-37	Tone Compensation
C10	.001	600	7239188	P688-001	D6-102	GP2L-001	TM-21	Audio Coupling
C11	.004	800	7230767	P1088-004			MB-24	Output Plate Bypass
C12	.006	1600	7240906	P1688-006			MB-26	Buffer

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GMC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Switch		7256188				Tone switch
B	300KΩ	½					Volume control and power switch
R2	2000Ω	1	7242204				Sensitivity control-Wire Wound

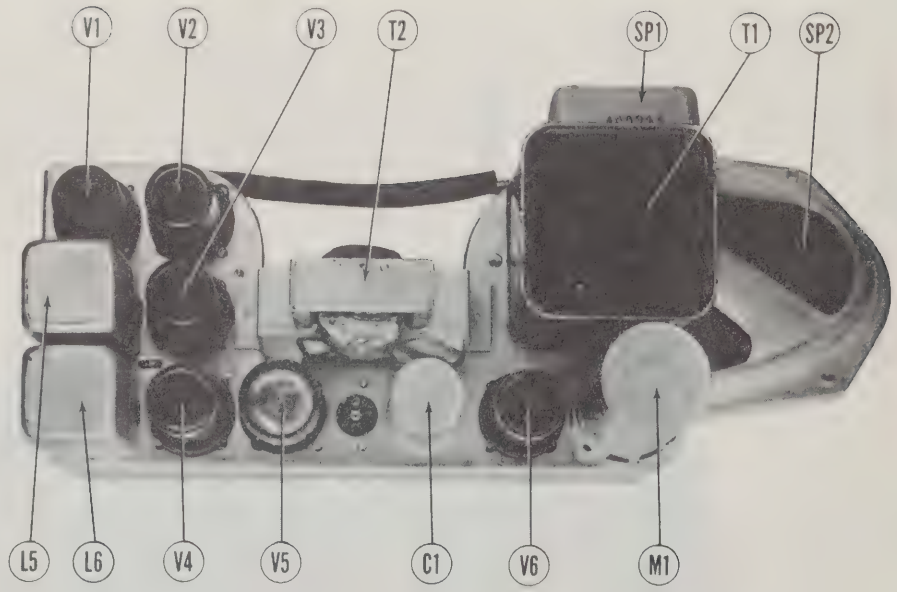
RESISTORS

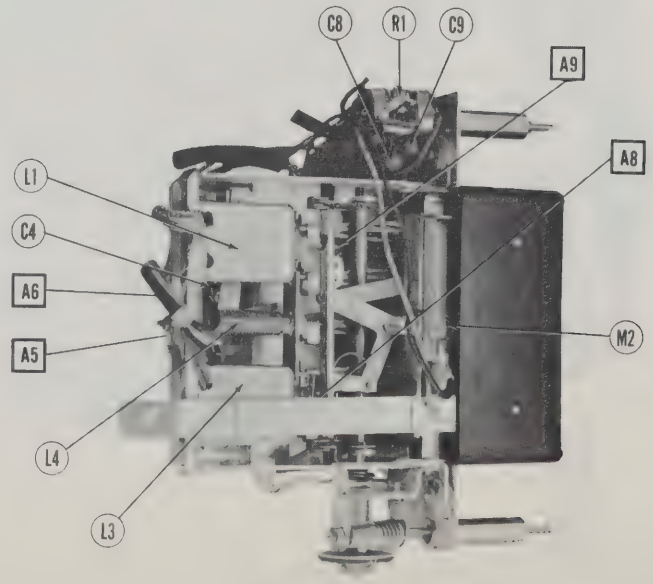
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GMC PART No.	IRC PART No.	IDENTIFICATION CODES
R3	220Ω	½	7237825	BW-½-220	RF Cathode
R4	2.2 Meg.	½	1214563	BTS-2.2 Meg.	AVC Network
R5	10KΩ	1	1211085	BTA-10K	RF Plate
R6	15KΩ	2	7233653	BT-2-15K	Screen Dropping
R7	330KΩ	½	1214557	BTS-330K	AVC Network
R8	22KΩ	½	1214550	BTS-22K	Osc. Grid
R9	1 Meg.	½	1213282	BTS-1 Meg.	AVC Network
R10	15 Meg.	½	1213289	BTS-15 Meg.	AF Grid
R11	220KΩ	½	1214555	BTS-220K	AF Plate
R12	220KΩ	½	1214555	BTS-220K	Output Grid
R13	390Ω	1	1216149	BTA-390	Output Cathode
R14	2700Ω	2	7242844	BW-2-2700	Filter-Wire Wound
R15	5600Ω	1	7240918	BW-1-5600	Filter
R16	220Ω	1	7237994	BW-1-220	Power Transformer Primary Shunt

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: GMC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC at 4.1A	600VCT .052ADC			7255881	P-4065	P-4076	VT-5

CHASSIS—TOP VIEW





PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GMC	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T2	5.3KΩ	4.2Ω	400Ω	.4Ω	7256009	A-3849 ①	A-3019 ①	RO-301 ①	① Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GMC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-814		
SP1	4Ω	4.2Ω	7241312	MOD. F69-T	69EV6	
	CONE DIA.	V. C. DIA.				
SP2	6 1/8" x 9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	GMC PART No.	MEISSNER PART No.
L1	Ant. Coil	8Ω		7256233	
L2	Ant. Choke	5.2Ω		7240251	
L3	RF Coil	8Ω		7256233	
L4	Osc. Coil	1Ω	5Ω	7256235	
L5	1st IF Trans.	48Ω	48Ω	7256011	
L6	2nd IF Trans.	27Ω		7256012	
L7	Hash Choke	0Ω		7255912	
L8	Hash Choke	0Ω		7256004	
L9	Hash Choke	0Ω		7256004	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				GMC PART No.	AEROVOX PART No.	RADIART PART No.	
M1	Int.	6V	115 ∿	7239124	A-100	5300	

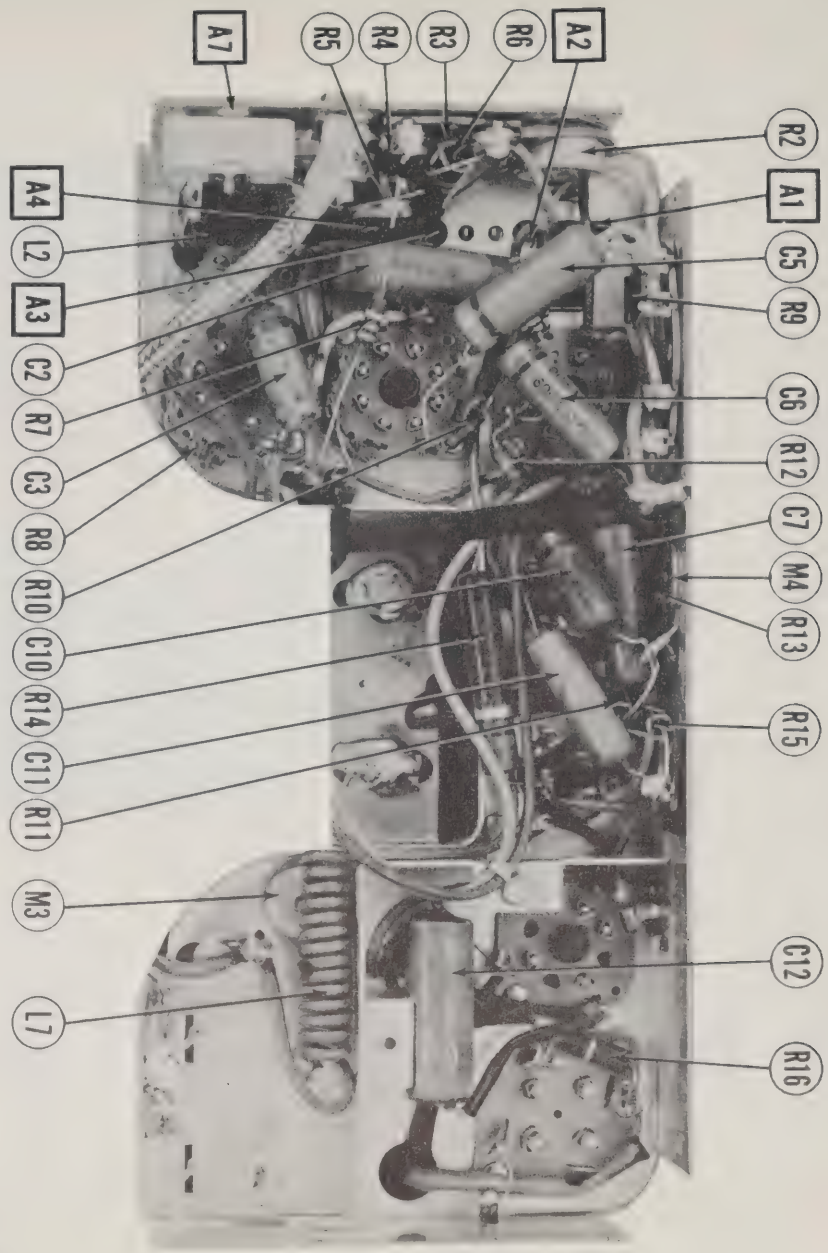
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					GMC PART No.		
M2	Bayonet	6-8	.4	White			Type #55

MISCELLANEOUS

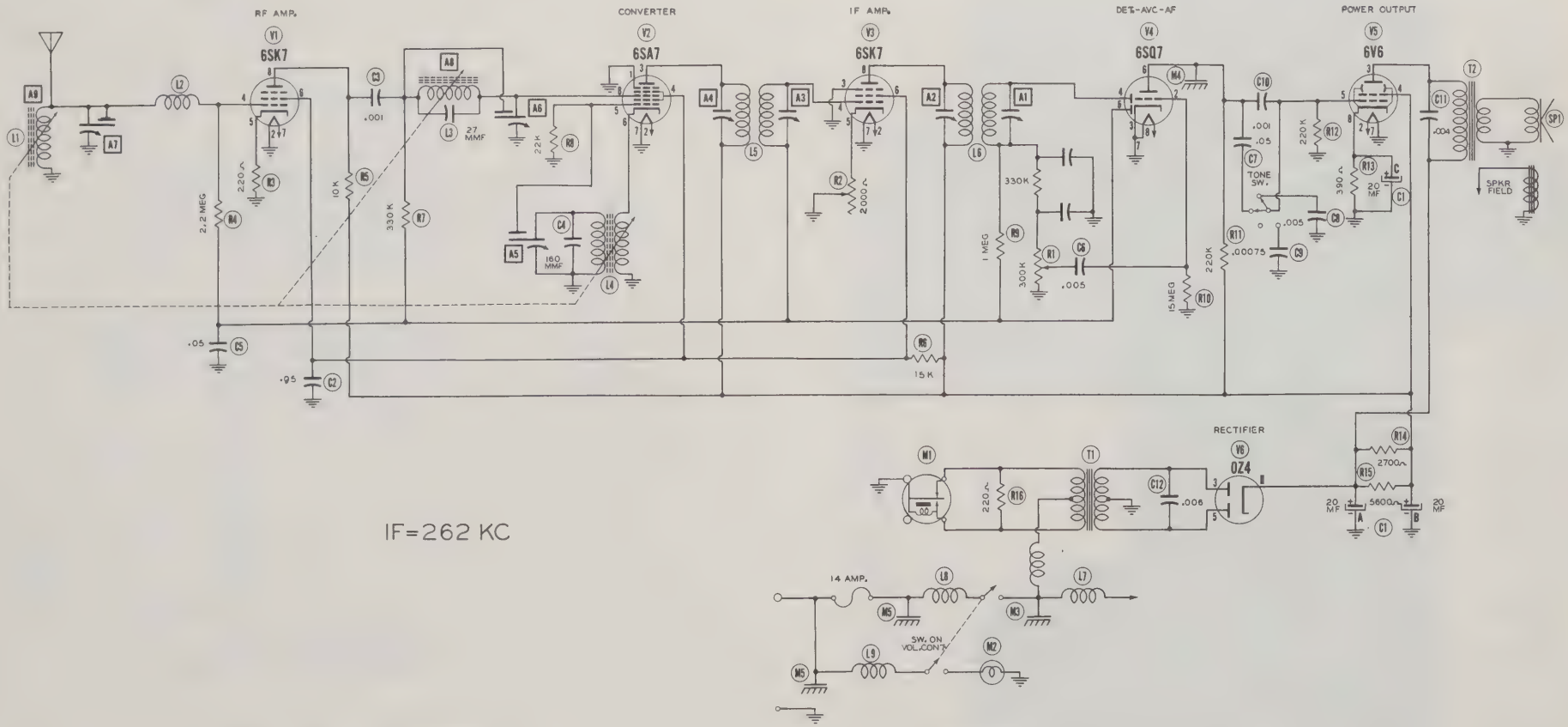
ITEM No.	PART NAME	GMC PART No.	NOTES
M3	Spark Plate	1217848	
M4	Spark Plate	1217848	
M5	Spark Plate	7241259	

CHASSIS—BOTTOM VIEW



GMC MODEL 2233029

GMC MODEL 2233029



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0V.	0V.	0V.	-.2VDC	1.4VDC	67VDC	6VDC	170VDC
V 2	6SA7	0V.	6VDC	220VDC	67VDC	5-8.6VDC	0V.	0V.	-.4VDC
V 3	6SK7	0V.	6VDC	0V.	-.4VDC	0V. 5VDC	67VDC	0V.	220VDC
V 4	6SQ7	0V.	-.4VDC	0V.	-.4VDC	-.4VDC	105VDC	0V.	6VDC
V 5	6V6GT	0V.	6VDC	270VDC	220VDC	0V.	0V.	0V.	13VDC
V 6	0Z4	0V.	0V.	300VAC	0V.	300VAC	0V.	0V.	380VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	4 Meg.	220Ω	†17KΩ	.1Ω	†12KΩ
V 2	6SA7	0Ω	.1Ω	†2KΩ	†17KΩ	22KΩ	1Ω	0Ω	2 Meg.
V 3	6SK7	0Ω	.1Ω	0Ω	1.6 Meg.	0Ω 1000Ω	†17KΩ	0Ω	†2KΩ
V 4	6SQ7	0Ω	15 Meg.	0Ω	600KΩ	1.6 Meg.	†220KΩ	0Ω	.1Ω
V 5	6V6GT	Inf.	.1Ω	†380Ω	†2KΩ	220KΩ	250KΩ	0Ω	390Ω
V 6	0Z4	0Ω	Inf.	290Ω	Inf.	315Ω	Inf.	Inf.	150KΩ

† MEASURED FROM PIN 8 OF V6.

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93-6

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MOTOROLA MODELS
12VK15 (CH. TS-30, A), 16VF8,
16VK7 (CH. TS-16, A)

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Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MOTOROLA MODELS
12VK15 (CH. TS-30, A), 16VF8,
16VK7 (CH. TS-16, A)

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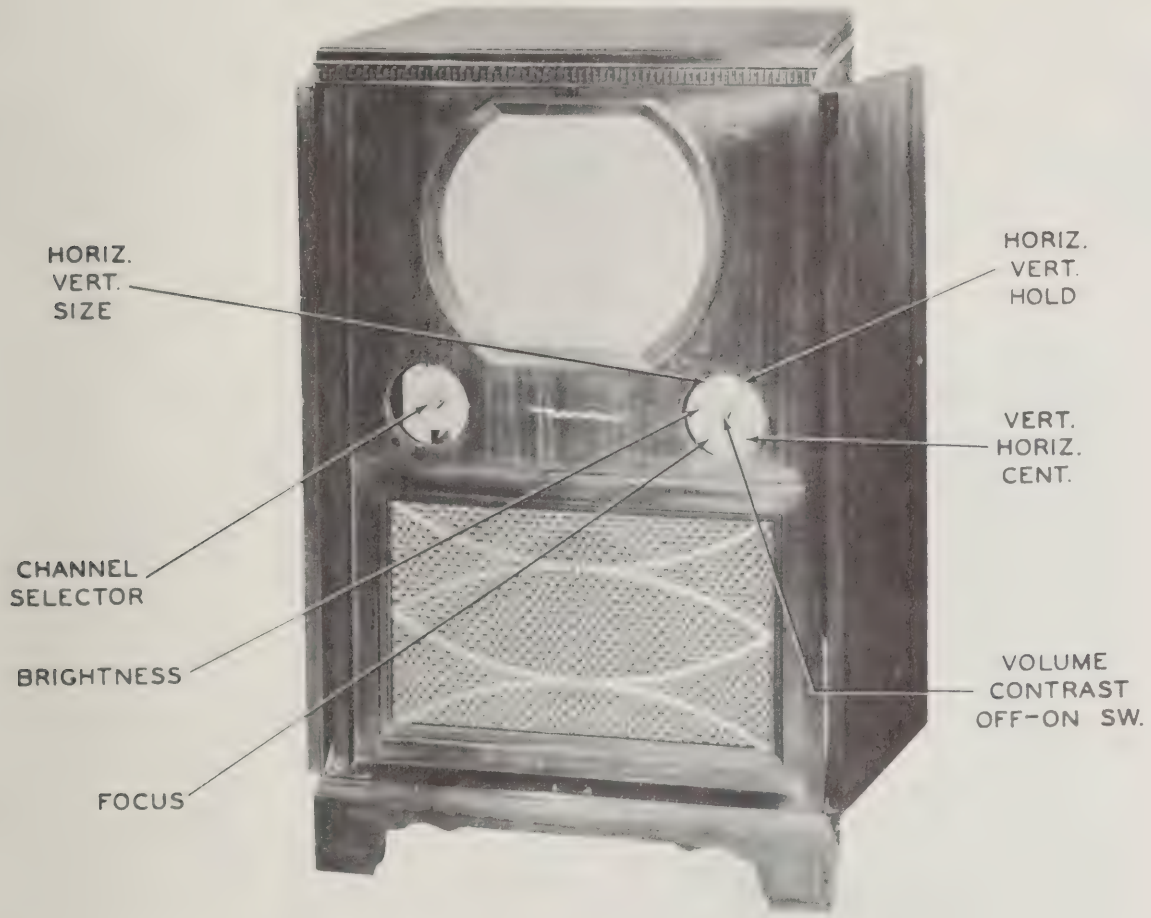
MOTOROLA MODELS 12VK15, 16VF8, 16VK7 (Ch. TS-16, TS-30)



MOTOROLA MODEL 12VK15

TRADE NAME	Motorola, Models 12VK15 (Ch. TS-30, A), 16VF8, 16VK7 (Ch. TS-16, A)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Illinois
TYPE SET	Television Receiver (Model 16VF8 Has AM-FM Chassis HS-211)
TUBES	Twenty Eight (TV Only Models) Thirty Seven (Model 16VF8)
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2.88 Amp. @ 117 Volts AC (TV Only)
TUNING RANGE	Channels 2 thru 13

INDEX

Alignment Instructions 6, 7
Block Diagram 19
Disassembly Instructions 16
Horiz. Oscillator Adjustment 16
Hum Control Adjustment 16
Parts List and Description 13, 14, 15, 16
Photographs
Capacitor Identification 11, 18
Photographs (continued)
Chassis-Top View 3
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification .. 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

FOR SERVICE INFORMATION ON AM-FM CHASSIS HS-211 SEE CHASSIS HS-170 - PHOTOFACT SET #80 - FOLDER # 10.

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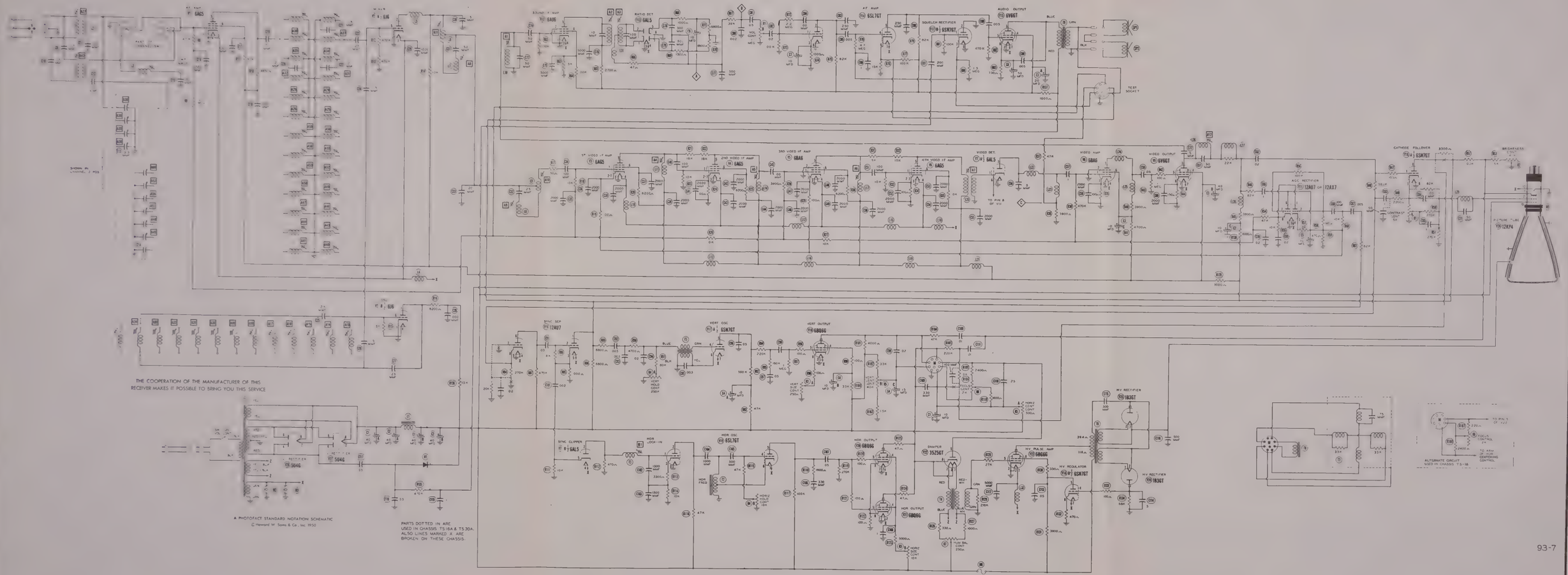
MOTOROLA MODELS 12VK15, 16VF8, 16VK7 (Ch. TS-16, TS-30)


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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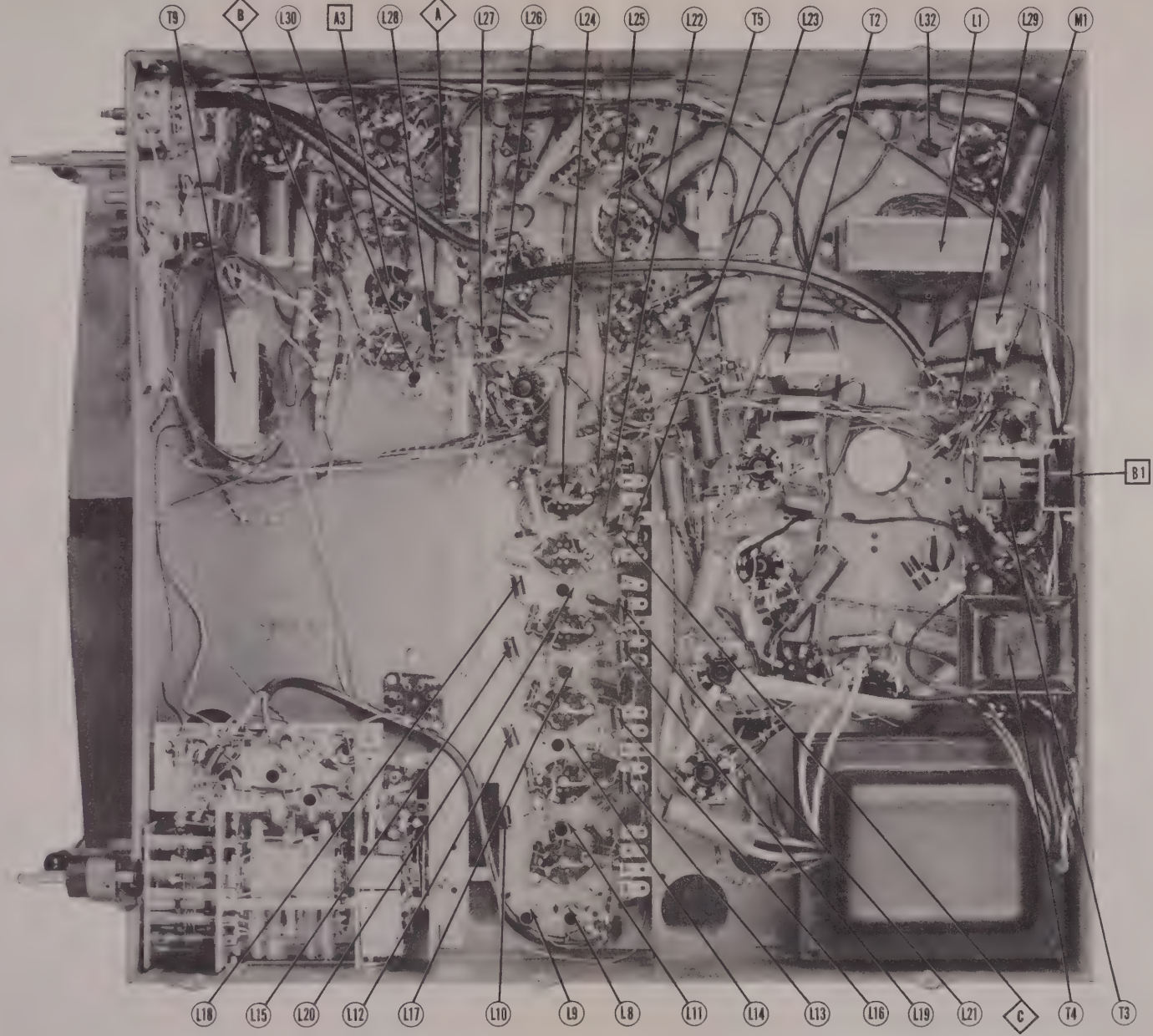
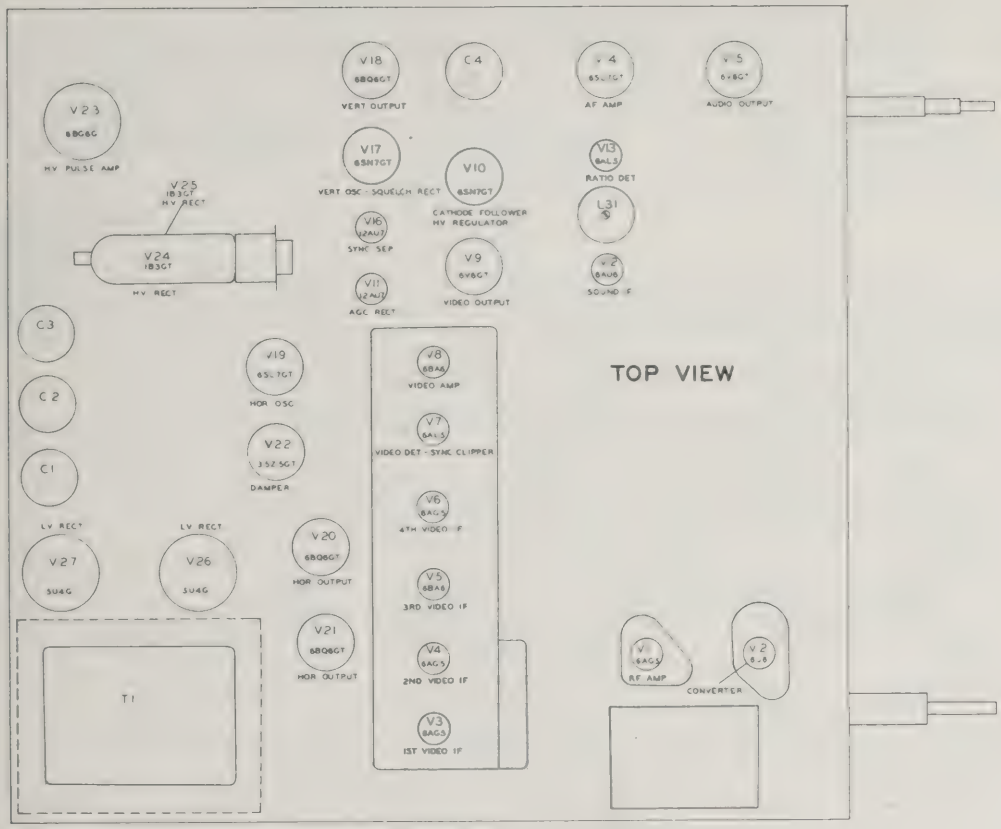
PARTS DOTTED IN ARE USED IN CHASSIS TS-16A & TS-30A. ALSO LINES MARKED X ARE BROKEN ON THESE CHASSIS.
ALTERNATE CIRCUIT USED IN CHASSIS TS-16
93-7

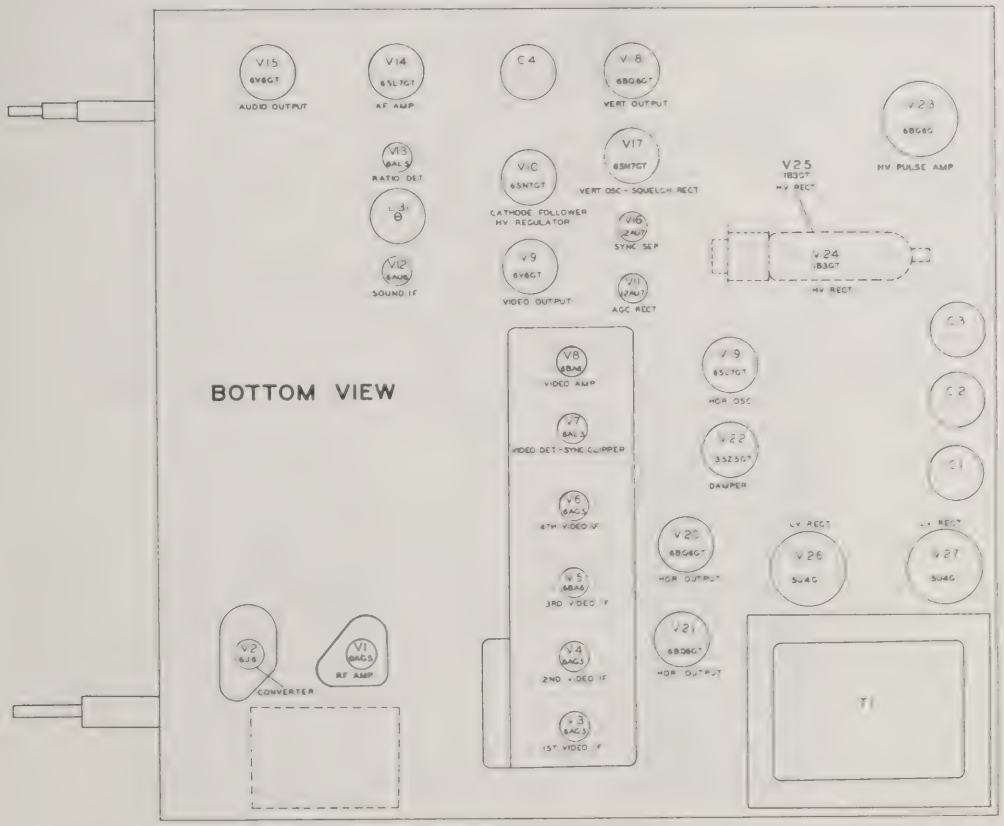
MOTOROLA MODELS 12VK15, 16VF8, 16VK7 (Ch. TS-16, TS-30)

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V19) from its socket.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any channel not used locally.	Vert. Amp. to Point (A). Low side to chassis.	A1, A2	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per Fig 1.
2.	.001MFD	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A3, A2	Reconnect capacitor C6. Adjust A3 so 4.5MC occurs at center of crossover lines as per Fig 2. Slightly retouch A2 for maximum amplitude and straightness of crossover lines.

VIDEO IF ALIGNMENT

To eliminate the possibility of erroneous indications, disable the local oscillator by turning the channel switch to one of the blank positions between "UHF" and channel 13. This may be done by loosening the set screw on the channel selector switch, and move the oscillator adjustment arm forward until it will clear the stop.

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Unsolder the connection between R21 and R22, and between R31 and R32. Reconnect these resistors before beginning step 4.

Remove the AGC tube (V11) from its socket.

Connect the negative lead of a 4 volt bias supply to pin 1 of V11 socket, connect the positive lead to chassis.

Before beginning step 5, connect the negative lead of an additional 3 volt bias source to the junction of R12 and R13, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.001MFD	High side to pin 1 (Grid) of 6AG5 (V3). Low side to chassis.	23.3MC (Unmod.)	See instructions above	DC Probe to Point (C). Common to chassis.	A4, A5, A6, A7	Adjust for maximum deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to pin 1 (Grid) of 6AG5 (V3). Low side to chassis.	24MC (10MC SWP)	22.4MC 26.4MC	See instructions above	Vert. Amp. to Point (C). Low side to chassis.	A4, A5, A6, A7	Adjust for response curve similar to Fig 3 with markers as shown.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to pin 5 (Grid) of 6J6 (V2). Low side to chassis.	20.4MC (Unmod.)	See instructions above	DC Probe to Point (C). Common to chassis.	A8	Adjust for MINIMUM deflection.
6.	.001MFD	"	27.9MC	"	"	A9	"

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to pin 5 (Grid) of 6J6 (V2). Low side to chassis.	24MC (10MC SWP)	20.4MC 22.4MC 26.4MC 27.9MC	See instructions above	Vert. Amp. to Point (C). Low side to chassis.	A10, A11	Adjust for response curve similar to Fig 4 with markers as shown.

4.5MC TRAP ADJUSTMENT

Turn the contrast control to maximum clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to pin 5 (Grid) of 6V6GT (V9). Low side to chassis.	Not used	4.5MC (30%-400 ∿ Mod.)	Any	Vert. Amp. to pin 2 (Grid) of picture tube (V28). Low side to chassis.	A12	Adjust for MINIMUM 400 ∿ indication on scope.

OSCILLATOR ALIGNMENT

Match the generator output lead to the 300 ohm antenna input.

For 50 ohm generator, connect a 100 ohm resistor in series with the high side and 150 ohms in series with the low side.

For 30 ohm generator, connect 120 ohm resistor in series with the high side and 150 ohm resistor in series with the low side.

Use only carbon resistors.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Carbon resistors (see instructions above)	Across antenna terminals.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (C). Low side to chassis.	A13	Adjust to place sound marker as shown in Fig 5.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A14	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A15	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A16	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A17	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A18	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A19	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A20	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A21	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A22	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A23	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A24	

ALIGNMENT INSTRUCTIONS (CONT.)

RF AND MIXER ADJUSTMENTS

The RF coils are adjusted by detuning one of them counter-clockwise and adjusting the remaining one for maximum deflection, the detuned adjustment is then peaked. Note that the frequency to which each channel is adjusted is 1MC higher than the center frequency of that channel. After peaking the second adjustment do not alter the setting of the first. The numbers given are for reference, in actuality it does not matter in which order the first two adjustments are made as long as the procedure outlined above is followed. The third adjustment for each channel is the antenna circuit adjustment and should be peaked after the first two are adjusted.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	Carbon resistors (see instructions above oscillator alignment	Across antenna terminals.	86MC (Unmod.)	6	DC Probe to Point C. Common to chassis.	A25, A26, A27	Detune A25 several turns counter-clockwise. Adjust A26 for maximum deflection, then adjust A25 for maximum deflection. DO NOT READJUST A26. Adjust A27 for maximum deflection.
11.	"	"	80MC	5	"	A28, A29, A30	Repeat the procedure outlined in step 10 above for each channel, (using the proper adjustments). A30 is not in some models.
			70MC	4		A31, A32, A33	
			64MC	3		A34, A35, A36	
			58MC	2		A37, A38, A39	
			214MC	13		A40, A41, A42	
			208MC	12		A43, A44, A45	
			202MC	11		A46, A47, A48	
			196MC	10		A49, A50, A51	
			190MC	9		A52, A53, A54	
			184MC	8		A55, A56, A57	
			178MC	7		A58, A59, A60	

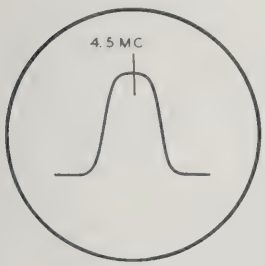


FIG. 1

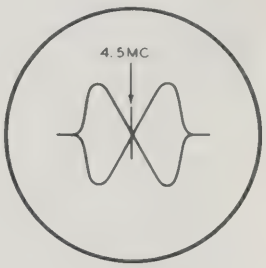


FIG. 2

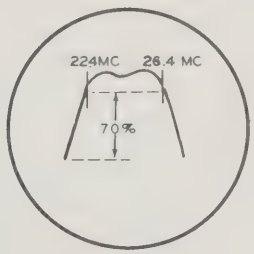


FIG. 3

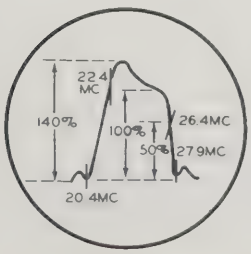


FIG. 4

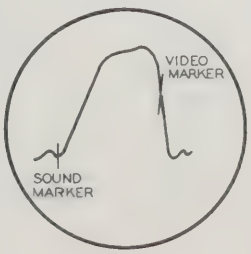


FIG. 5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1VDC	0V.	6.3VAC	0V.	117VDC	100VDC	0V.		
V 2	6J6	125VDC	100VDC	0V.	6.3VAC	-2.2VDC	§-4.8VDC	0V.		
V 3	6AG5	.8VDC	2.8VDC	0V.	6.3VAC	125VDC	112VDC	2.8VDC		
V 4	6AG5	0V.	3.4VDC	0V.	6.3VAC	125VDC	100VDC	3.4VDC		
V 5	6BA6	1.1VDC	0V.	0V.	6.3VAC	125VDC	100 VDC	4VDC		
V 6	6AG5	0V.	.9VDC	0V.	6.3VAC	120VDC	100VDC	.9VDC		
V 7	6AL5	0V.	-.1VDC	0V.	6.3VAC	2.1VDC	3.1VDC	-1VDC		
V 8	6BA6	.3VDC	0V.	0V.	6.3VAC	45VDC	70VDC	1VDC		
V 9	6V6GT	0V.	6.3VAC	165VDC	117VDC	0V.	0V.	0V.	3.7VDC	
V 10	6SN7GT	12.5VDC	280VDC	30VDC	-.1VDC	175VDC	4VDC	6.3VAC	0V.	
V 11	12AU7	3.1VDC	.7VDC	4.5VDC	6.3VAC	6.3VAC	4.5VDC	.6VDC	3.1VDC	0V.
V 12	6AU6	-.7VDC	0V.	0V.	6.3VAC	230VDC	26VDC	0V.		
V 13	6AL5	-.1VDC	.6VDC	0V.	6.3VAC	.3VDC	0V.	-.4VDC		
V 14	6SL7GT	0V.	145VDC	1.1VDC	.8VDC	225VDC	31VDC	6.3VAC	0V.	
V 15	6V6GT	0V.	0V.	212VDC	230VDC	0V.	0V.	6.3VAC	12VDC	
V 16	12AU7	165VDC	17VDC	18VDC	6.3VAC	6.3VAC	220VDC	0V.	18.5VDC	0V.
V 17	6SN7GT	-.6VDC	0V.	15VDC	-25VDC -33VDC	135VDC	0V.	6.3VAC	0V.	
V 18	6BQ6GT	115VDC	0V.	137VDC	137VDC	-.8VDC	-.8VDC	6.3VAC	5VDC 14VDC	TOP CAP 120VDC
V 19	6SL7GT	-.1VDC	260VDC	4.8VDC	-7VDC -11VDC	175VDC	0V.	6.3VAC	0V.	
V 20	6BQ6GT	0V.	6.3VAC	240VDC	117VDC 135VDC	-3.8VDC	-3.8VDC	0V.	15.5VDC	TOP CAP 250VDC
V 21	6BQ6GT	260VDC	6.3VAC	240VDC	117VDC 135VDC	-3.8VDC	-3.8VDC	0V.	15.5VDC	TOP CAP 250VDC
V 22	35Z5GT	0V.	250VDC	250VDC	0V.	65VDC	240VDC	250VDC	250VDC	
V 23	6BG6G	0V.	0V.	0V.	-.1VDC	-15VDC	0V.	6.3VAC	170VDC	TOP CAP *
V 24	1B3GT	* DO NOT MEASURE.								
V 25	1B3GT	* DO NOT MEASURE.								
V 26	5U4G	0V.	300VDC	34VDC	315VAC	0V.	315VAC	122VDC	300VDC	
V 27	5U4G	400VDC	300VDC	0V.	315VAC	0V.	315VAC	0V.	300VDC	
V 28	12KP4	0V.	0V.	PIN 10 400VDC	PIN 11 34VDC 77VDC	PIN 12 6.3VAC				

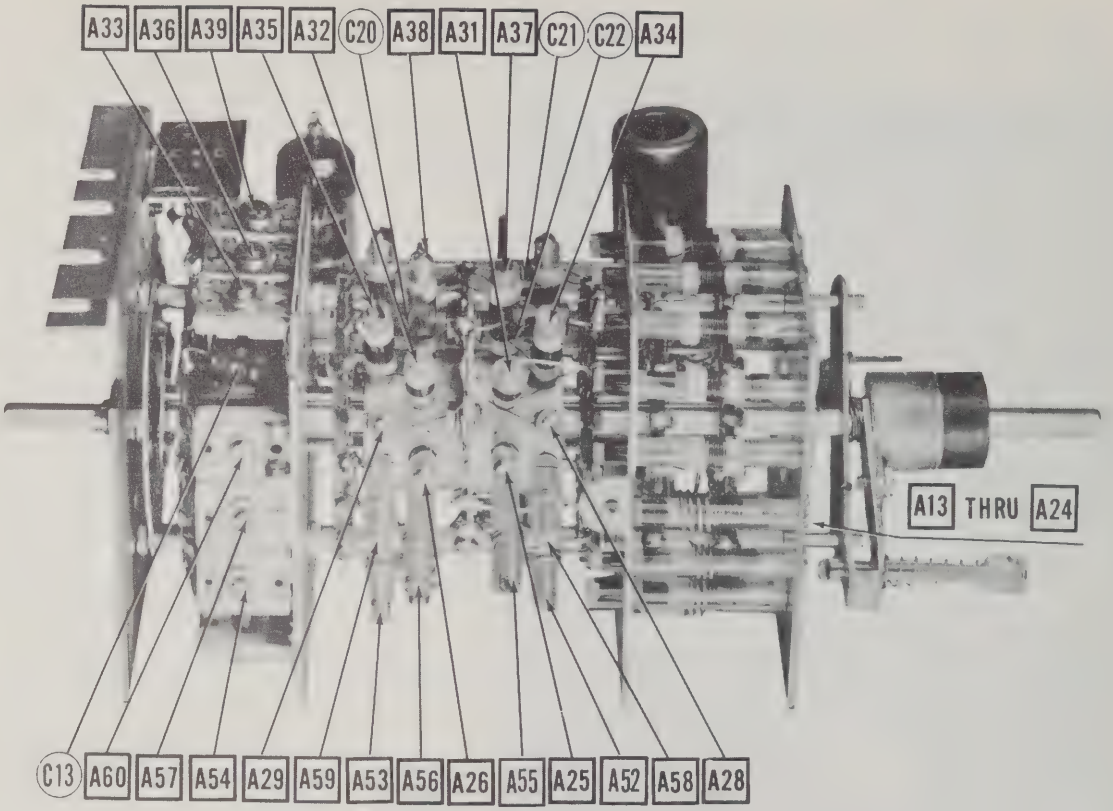
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

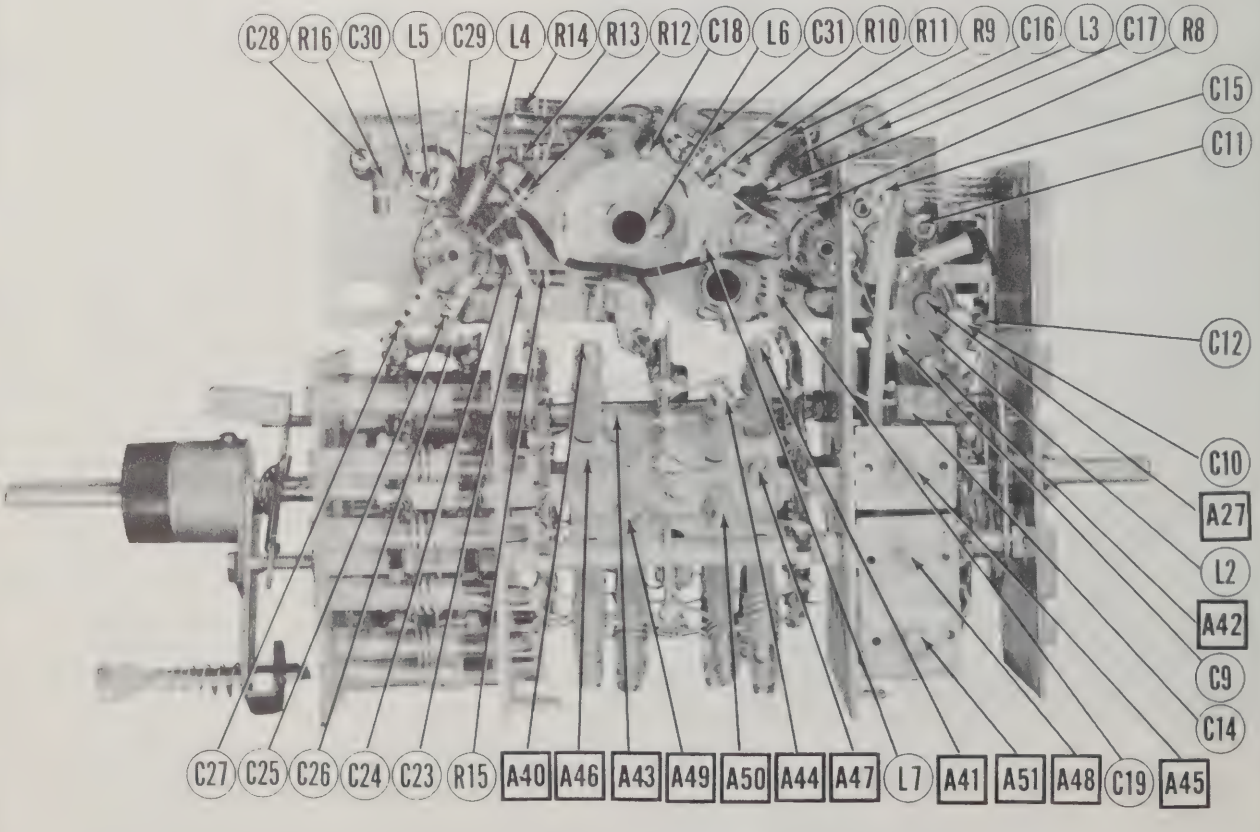
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	¶3.7 Meg.	0Ω	.1Ω	0Ω	#7KΩ	#36KΩ	0Ω		
V 2	6J6	#23KΩ	#13KΩ	0Ω	.1Ω	1 Meg.	15KΩ	0Ω		
V 3	6AG5	¶70KΩ	550Ω	0Ω	.1Ω	#3KΩ	#11KΩ	550Ω		
V 4	6AG5	10KΩ	100Ω	0Ω	.1Ω	#3KΩ	#11KΩ	100Ω		
V 5	6BA6	¶55KΩ	0Ω	0Ω	.1Ω	#3KΩ	#11KΩ	550Ω		
V 6	6AG5	10KΩ	100Ω	0Ω	.1Ω	#3KΩ	#13KΩ	100Ω		
V 7	6AL5	.1Ω	470Ω	0Ω	.1Ω	10KΩ	¶0Ω	3.9KΩ		
V 8	6BA6	¶500KΩ	0Ω	0Ω	.1Ω	#11.5KΩ	#7.5KΩ	100Ω		
V 9	6V6GT	0Ω	.1Ω	#5KΩ	#3KΩ	1 Meg.	1 Meg.	0Ω	150Ω	
V 10	6SN7GT	630KΩ	#400Ω	5KΩ	68KΩ	#3KΩ	470Ω	.1Ω	0Ω	
V 11	12AU7	Inf.	1 Meg.	12.5KΩ	.1Ω	.1Ω	12.5KΩ	1 Meg.	Inf.	0Ω
V 12	6AU6	100KΩ	0Ω	0Ω	.1Ω	#4KΩ	#24KΩ	0Ω		
V 13	6AL5	Inf.	Inf.	0Ω	.1Ω	7.8KΩ	0Ω	8.3KΩ		
V 14	6SL7GT	100KΩ	#82KΩ	1000Ω	6 Meg.	#82KΩ	13KΩ	.1Ω	0Ω	
V 15	6V6GT	0Ω	0Ω	#1.5KΩ	#1000Ω	470KΩ	Inf.	.1Ω	330Ω	
V 16	12AU7	#6.8KΩ	19KΩ	1000Ω	.1Ω	.1Ω	#470KΩ	0Ω	270KΩ	0Ω
V 17	6SN7GT	100KΩ	0Ω	1.5 Meg.	430KΩ 180KΩ	#600KΩ	50Ω	.1Ω	0Ω	
V 18	6BQ6GT	#3KΩ	0Ω	#30KΩ	#30KΩ	1 Meg.	1 Meg.	.1Ω	350Ω 100Ω	TOP CAP #4KΩ
V 19	6SL7GT	650Ω	#47KΩ	13KΩ	57KΩ 47KΩ	#100KΩ	8Ω	.1Ω	0Ω	
V 20	6BQ6GT	Inf.	.1Ω	#300Ω	#15KΩ #5KΩ	270KΩ	270KΩ	0Ω	100Ω	TOP CAP #300Ω
V 21	6BQ6GT	#420Ω	.1Ω	#300Ω	#15KΩ #5KΩ	270KΩ	270KΩ	0Ω	100Ω	TOP CAP #300Ω
V 22	35Z5GT	Inf.	#250Ω	#250Ω	Inf.	#3KΩ	#10KΩ	#250Ω	#250Ω	
V 23	6BG6G	Inf.	0Ω	0Ω	68KΩ	27KΩ	3.5Ω	.1Ω	#4.2KΩ	TOP CAP #150Ω
V 24	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 68KΩ
V 25	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V 26	5U4G	Inf.	18KΩ	27KΩ 12KΩ	7.6Ω	Inf.	8.6Ω	#2.5KΩ	18KΩ	
V 27	5U4G	#47KΩ	18KΩ	Inf.	7.6Ω	Inf.	8.6Ω	Inf.	18KΩ	
V 28	12KP4	0Ω	130KΩ	PIN 10 †0Ω	PIN 11 23KΩ 10KΩ	PIN 12 .1Ω				

MEASURED FROM PIN 8 OF V26.
¶ MEASURED FROM PIN 1 OF V11.
† MEASURED FROM R135.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER



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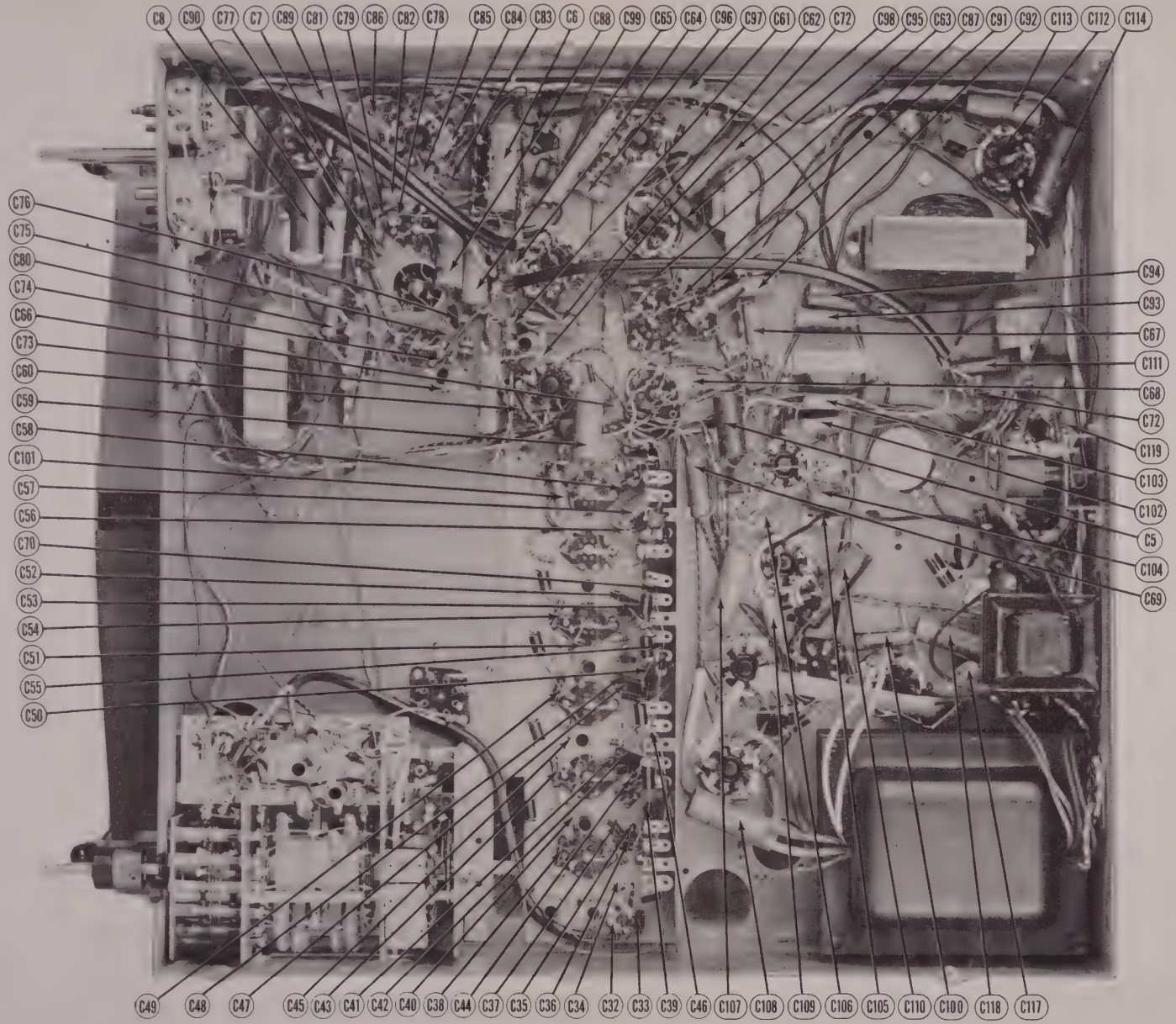
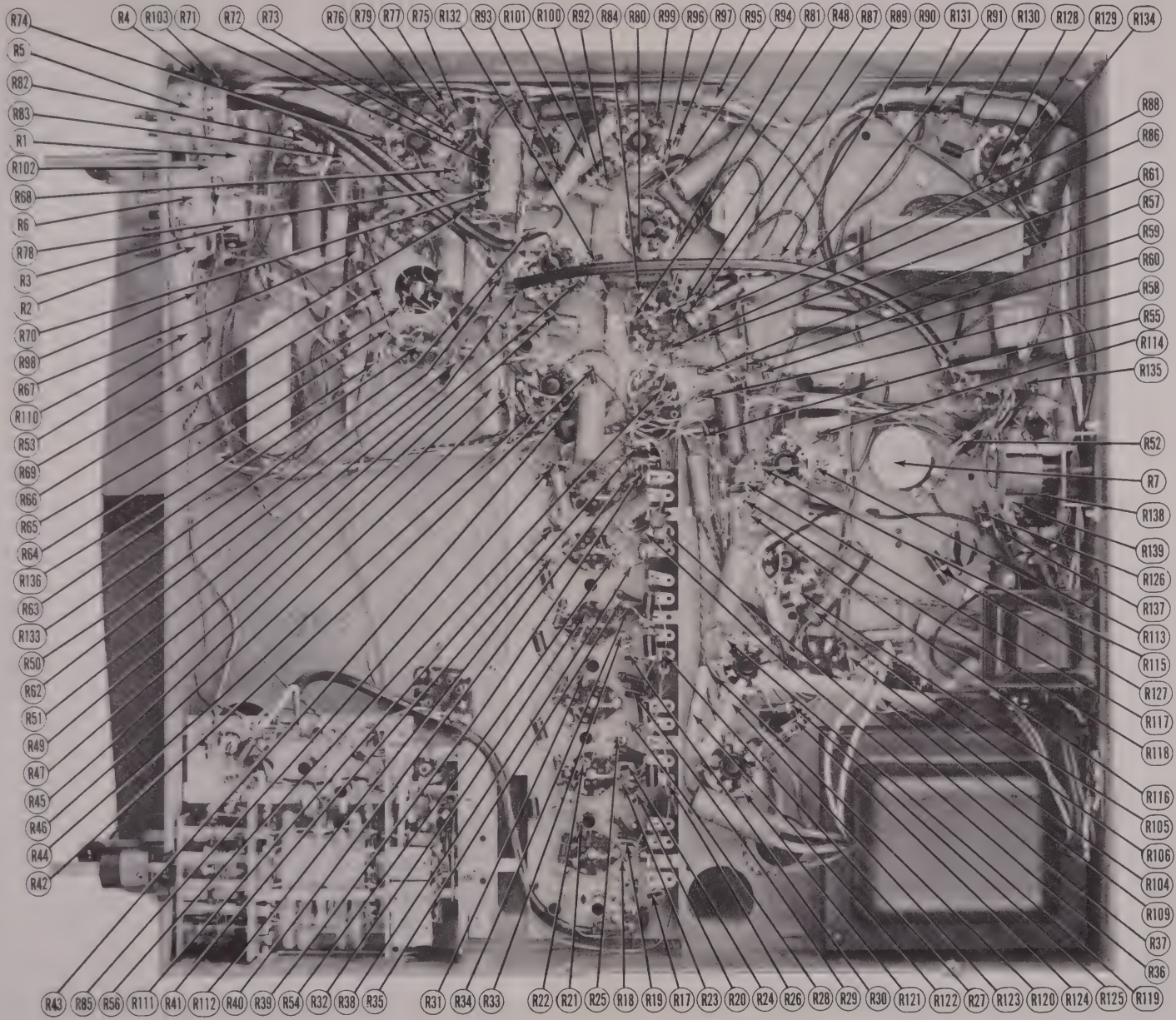


CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AG5	6AG5	7BD	
V4	2nd Video IF	6AG5	6AG5	7BD	
V5	3rd Video IF	6BA6	6BA6	7BK	
V6	4th Video IF	6AG5	6AG5	7BD	
V7	Video Det.-Sync. Clipper	6AL5	6AL5	6BT	
V8	Video Amp.	6BA6	6BA6	7BK	
V9	Video Output	6V6GT	6V6GT	7AC	
V10	Cathode Follower-HV Regulator	6SN7GT	6SN7GT	8BD	
V11	AGC Rectifier	12AU7	12AU7	9A	
V12	Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Det.	6AL5	6AL5	6BT	
V14	AF Amp.	6SL7GT	6SL7GT	8BD	
V15	Audio Output	6V6GT	6V6GT	7AC	
V16	Sync. Sep.	12AU7	12AU7	9A	
V17	Vert. Osc.-Squelch Rect.	6SN7GT	6SN7GT	8BD	
V18A	Vert. Output	6BQ6GT	6BQ6GT	6AM	
B	Vert. Output	6Y6G	6Y6G	7AC	
V19	Hor. Osc.	6SL7GT	6SL7GT	8BD	
V20A	Hor. Output	6BQ6GT	6BQ6GT	6AM	
B	Hor. Output	6Y6G	6Y6G	7AC	
V21A	Hor. Output	6BQ6GT	6BQ6GT	6AM	
B	Hor. Output	6Y6G	6Y6G	7AC	
V22	Damper	35Z5GT	35Z5GT	6AD	
V23	HV Pulse Amp.	6BG6G	6BG6G	5BT	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25	HV Rectifier	1B3GT	1B3GT	3C	
V26	LV Rectifier	5U4G	5U4G	5T	
V27	LV Rectifier	5U4G	5U4G	5T	
V28A	Picture Tube	12KP4	12KP4	12D	
B	Picture Tube	16AP4	16AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	400	23A790829	AFH882J			TVL-30	▲ Filter
B	40	400						■ Filter
C	10	400						▲ Filter
C2A	40	400	23A790829	AFH882J			TVL-30	▲ Filter
B	40	400						■ Filter
C	10	400						▲ Filter
C3A	20	350	23A790831	AFH4H8G2D				■ Filter
B	40	300						▲ Filter
C	10	150						1st V. Amp. Decoupling
C4A	10	300	23A790830	AF333J				■ Vert. Osc. Plate Decoupling
B	10	300						▲ Vert. Output Screen Bypass
C	15	250						Vert. Cent. Cont. Bypass
C5	10	25	23A90112	PRS25/10			TVA-5	V. IF Cathode Bypass
C6	10	50	23A90205	PRS50/10			TVA-14	Stabilizing Cap.
C7	10	25	23A90112	PRS25/10			TVA-5	1st AF Amp. Cathode Bypass
C8	50	25	23A790904	PRS25/50			TVA-7	Output Cathode Bypass
C9	7.5		21K790454		D2-6.8	NPOK-8.2		Ant. Coupling
C10	7.5		21K790454		D2-6.8	NPOK-8.2		Ant. Coupling
C11	100		21K470736	CN100JN750	DN-100	N750L-100		Fixed Padder
C12	10		21K790455	GP10K	D6-100	GPlK-10		RF Coupling
C13	3.3	300	21K790416	CI3.3CNPO	D2-3.3	NPOK-3.3		Fixed Trimmer
C14	3.3	300	21K790416	CI3.3CNPO	D2-3.3	NPOK-3.3		Fixed Trimmer
C15	150		21K791589	GP150K	D6-151	GPlK-150		Voltage Divider
C16	1000		21K478410	GP1000M	D6-102	GP2L-001		AGC Filter
C17	1000		21K478410	GP1000M	D6-102	GP2L-001		RF Screen Bypass
C18	1000		21K478410	GP1000M	D6-102	GP2L-001		RF Bypass
C19	100		21K470736	CN100KN750	DN-100	N750L-100		RF Coupling
C20	2	300	21K471216					Fixed Trimmer
C21	1.5	300	21R2751		D2-1.5	NPOK-1.5		Fixed Trimmer
C22	2	300	21K471216					Fixed Trimmer
C23	25		21A470738	GP25K	D6-250	GPlK-25		RF Coupling
C24	1.5	300	21K482296		D2-1.5	NPOK-1.5		Osc. Coupling
C25	25		21A470738	GP25K	D6-250	GPlK-25		Osc. Grid Cap.
C26	1.5		21A780121					Fixed Trimmer
C27	25		21A470738	GP25K	D6-250	GPlK-25		Osc. Feedback
C28	1000		21K478410	GP1000M	D6-102	GP2L-001		RF Bypass
C29	1000		21K478410	GP1000M	D6-102	GP2L-001		Conv. Filament Bypass
C30	5		21K86819					Fixed Trimmer
C31	50		21K77373	CN50JNPO	D2-51	NPOM-50	MS-45	Fixed Trimmer
C32	25		21K28816	CN25JNPO	D2-24	NPOL-25	MS-425	Fixed Trimmer
C33	20		21K470322	CN20JNPO	D2-20	NPOK-20	MS-42	Fixed Trimmer
C34	100		21K38224	1468-0001	D6-101	GPlK-100	1FM-31	IF Coupling
C35	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	AGC Filter
C36	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	1st V. IF Cathode Bypass
C37	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	1st V. IF Screen Bypass
C38	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	1st V. IF Filament Bypass
C39	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	1st V. IF Decoupling
C40	100		21K38224	GP100M	D6-101	GPlK-100	1FM-31	IF Coupling
C41	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	2nd V. IF Cathode Bypass
C42	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	2nd V. IF Screen Bypass
C43	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	2nd V. IF Filament Bypass
C44	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	2nd V. IF Decoupling
C45	100		21K38224	GP100M	D6-101	GPlK-100	1FM-31	IF Coupling
C46	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	AGC Filter
C47	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	3rd V. IF Cathode Bypass
C48	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	3rd V. IF Screen Bypass
C49	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	3rd V. IF Fil. Bypass
C50	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	3rd V. IF Decoupling
C51	100		21K38224	GP100M	D6-101	GPlK-100	1FM-31	IF Coupling
C52	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	4th V. IF Cathode Bypass
C53	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	4th V. IF Screen Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA MOTOROLA PART No	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	4th V. IF Filament Bypass
C55	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	4th V. IF Decoupling
C56	5		21K86819	GP5K	D2-4.7	NPOK-5	MS-55	V. Diode Filter
C57	1	100	8R9854	P288-1			TM-1	Video Coupling
C58	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	Video Amp. Cathode Bypass
C59	05	600	8R9873	P688-05			TM-15	Video Coupling
C60	2000		21K790963	GP2000M	D6-202	GP2M-002	1FM-22	Video Output Cathode Bypass
C61	50		21K77373	CN50JNPO	D2-51	NPOM-50	MS-45	Fixed Trimmer
C62	02	600	8R9871	P688-02			TM-12	Video Coupling
C63	1	200	8R9854	P288-1			TM-1	Video Coupling
C64	100		21K38224	GP100M	D6-101	GP1K-100	1FM-31	Video Coupling
C65	1	200	8R9854	P288-1			TM-1	Video Coupling
C66	1	400	8R9862	P488-1			TM-1	Video Coupling
C67	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Sync. Coupling
C68	100		21K38224	GP100M	D6-101	GP1K-100	1FM-31	Sync. Coupling
C69	02	200	8R9851	P488-02			TM-12	AGC Filter
C70	02	100	8R9851	P488-02			TM-12	AGC Filter
C71	50		21K77373	CN50JNPO	D2-51	NPOM-50	MS-45	Fixed Trimmer
C72	5		21K86819	GP5K	D2-4.7	NPOK-5	MS-55	S. IF Coupling
C73	50		21K77373	CN50JNPO	D2-51	NPOM-50	MS-45	Fixed Trimmer
C74	50		21K77373	GP50M	D6-500	GP1K-50	1FM-45	S. IF Coupling
C75	5000		21A470789	BPD-5	D6-502	811-005	29C1	S. IF Screen Bypass
C76	5000		21A470789	BPD-5	D6-502	811-005	29C1	S. IF Plate Decoupling
C77	500		21K791056	GP500M	D6-501	GP2K-500	1FM-35	RF Bypass
C78	500		21K791056	GP500M	D6-501	GP2K-500	1FM-35	Diode Load Cap. *
C79	500		21K791056	GP500M	D6-501	GP2K-500	1FM-35	Diode Load Cap. *
C80	002	600	8R9867	P688-002	D6-202	GP2M-002	TM-22	De-emphasis
C81	05	200	8R9853	P288-05			TM-15	Audio Coupling
C82	02	200	8R9851	P488-02			TM-12	Audio Coupling
C83	250		21B482295	GP250M	D6-251	GP2K-350	1FM-325	1st AF Amp. Plate Bypass
C84	100		21K38224	GP100M	D6-101	GP1K-100	1FM-31	AF Feedback
C85	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Audio Coupling
C86	250		21B482295	GP250M	D6-251	GP2K-250	1FM-325	2nd AF Amp. Plate Bypass
C87	200	500	21R6629	1468-0002	D6-201	GP2K-200	1FM-32	Squelch Diode Coupling
C88	1	200	8R9854	P288-1			TM-1	Squelch Diode Filter
C89	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Audio Coupling
C90	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Output Plate Bypass
C91	03	600	8R9872	P688-03			TM-13	Sync Coupling
C92	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Vert. Sync. Coupling
C93	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Integrator Net.
C94	02	600	8R9871	P688-02			TM-12	Integrator Net.
C95	005	600	8R9869	P688-005	D6-502	GP2M-005	TM-25	Fixed Trimmer
C96	05	400	8R9861	P488-05			TM-15	Vert. Discharge
C97	05	400	8R9861	P488-05			TM-15	Vert. Discharge
C98	1	600	8R9874	P688-1			TM-1	Vert. Sweep Coupling
C99	02	600	8R9871	P688-02			TM-12	Fixed Trimmer
C100	01	600	8R3620	P688-01	D6-103	GP2-335-01	TM-11	Vert. Sweep Coupling
C101	002	400	8R9859	P688-002	D6-202	GP2M-002	TM-22	Hor. Sync. Coupling
C102	500	500	21R6651	1467-0015	D6-152	GP2L-0015	1FM-215	AFC Filter
C103	500	500	21R6651	1467-0015	D6-152	GP2L-0015	1FM-215	AFC Filter
C104	1000	500	21R6663	1467-001	D6-102	GP2L-001	1FM-21	AFC Coupling
C105	500	500	21R6551	1468-0005	D6-501	GP2K-500	1FM-35	Hor. Osc. Grid Cap.
C106	330	500	21K2754		D6-331	GP2K-330		Hor. Discharge
C107	05	600	8R9873	P688-05			TM-15	Hor. Sweep Coupling
C108		600	8R9874	P688-1			TM-1	Hor. Output Screen Bypass
C109	330	4000	21K790954					Fixed Trimmer
C110	25	400	8R9864	P488-25			TC-2	Damper Filter
C111	01	600	8R9870	P688-01	D6-103	GP2-335-01	TM-11	Hor. Sweep Coupling
C112	5000		21A470789	BPD-5	D6-502	811-005	29C1	HV Pulse Amp. Fil. Bypass
C113	05	600	8R9873	P688-05			TM-15	HV Pulse Amp. Screen Bypass
C114	5	200	8R9856	P288-5			TC-5	HV Reg. Filter †
C115	500	20000	21A790833					Voltage Doubler Cap.
C116	500	15000	21A790832					HV Filter
C117	05	600	8R9873	P688-05			TM-15	Booster Coupling
C118	05	600	8R9873	P688-05			TM-15	Booster Filter
C119	1	600	8R9874	P688-1			TM-1	Booster Filter

* When either item C78 or C79 are replaced, replace both with capacitors of equal value.
† Some models use 25MFD in this application

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	2	18B790843				Contrast control-Wire Wound
B	1 Meg.	½					Volume control and switch
R2	25KΩ	½	18A790836	Q11-120	M-40-S	B-26	Brightness control
R3A	250Ω	2	18A790835				Vert. size control-Wire Wound
B	10KΩ	2					Horiz. size control-Wire Wound
R4A	250KΩ	½	B11-130 *				Vert. hold control, panel
B	10KΩ	½	18A790838	B11-116 *			Horiz. hold control, rear
C	Shaft End			E157 *			Attach per instructions in "Concentrikit"
R5A	500Ω	4	18A790837				Horiz. centering control-Wire Wound
B	40KΩ	½					Vert. centering control
R6	2000Ω	4	18A790842				Focus control-Wire Wound-See Note 1
R7	250Ω	2	18A790841		43-250		Hum control-Wire Wound

* Additional parts to be used with "Concentrikit".
Note 1 Chassis TS-16 uses 4,000Ω, 4 watt control, part No. 18A790834.

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R8	470KΩ	½	6R6377		RF Grid
R9	2.7 Meg.	½	6R488136	BTS-2.7 Meg.	AGC Network
R10	3900Ω	½	6R5650	BTS-3900	RF Plate
R11	33KΩ	½	6R6410		RF Screen
R12	470KΩ	½	6R6377		Conv. Grid
R13	470KΩ	½	6R6377		Conv. Grid
R14	10KΩ	½	6R6320		Conv. Plate
R15	15KΩ	½	6R6477		Osc. Grid
R16	8200Ω	½	6R2004		Osc. Plate
R17	1500Ω 20%	½	6R3992		Parasitic Supp.
R18	10KΩ	½	6R6320	BTS-10K	1st Video IF Grid

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R19	100Ω 20%	½	6R6018		1st Video IF Cathode
R20	8200Ω	½	6R2004		1st Video IF Screen
R21	18KΩ	½	6R5591		Feedback
R22	18KΩ	½	6R5591		Feedback
R23	10KΩ	½	6R6320	BTS-10K	2nd Video IF Grid
R24	100Ω	½	6R6326		2nd Video IF Cathode
R25	8200Ω	½	6R2004		2nd Video IF Screen
R26	10KΩ 20%	½	6R6054	BTS-10K	AGC Network
R27	10KΩ 20%	½	6R6054	BTS-10K	AGC Network
R28	3900Ω	½	6R5659	BTS-3900	3rd Video IF Grid
R29	100Ω 20%	½	6R6018		3rd Video IF Cathode
R30	8200Ω	½	6R2004		3rd Video IF Screen
R31	15KΩ	½	6R6477		Feedback
R32	15KΩ	½	6R6477		Feedback
R33	10KΩ	½	6R6320	BTS-10K	4th Video IF Grid
R34	100Ω	½	6R6326		4th Video IF Cathode
R35	10KΩ	½	6R6320	BTS-10K	4th Video IF Screen
R36	3900Ω	½	6R5659	BTS-3900	Video Det. Diode Load
R37	47KΩ	½	6R6056	BTS-47K	Series Test Point
R38	470KΩ	½	6R6032	BTS-470K	Video Amp. Grid
R39	100Ω	½	6R6326		Video Amp. Cathode
R40	3900Ω	½	6R5659	BTS-3900	Video Amp. Plate
R41	4700Ω	2	6R5671	BT-2-4700	Video Amp. Decoupling
R42	100Ω 20%	½	6R6018		Parasitic Supp.
R43	1 Meg. 20%	½	6R6004	BTS-1 Meg.	Video Output Grid
R44	150Ω	1	6R3992		Video Output Cathode
R45	3900Ω	½	17K790901	AB-4000	Video Output Plate-Wire Wound
R48	82KΩ	½	6R5644	BTS-82K	Isolation
R47	100Ω 20%	½	6R6018		Parasitic Supp.
R48	560KΩ	½	6R5697	BTS-560K	Cathode Follower Amp. Grid
R49	2200Ω	½	6R6069	BTS-2200	Phase Correction
R50	270KΩ	½	6R6414	BTS-270K	Voltage Divider
R51	270KΩ	½	6R6414	BTS-270K	Picture Tube Grid
R52	100KΩ 20%	2	6R490389	BT-2-100K	Voltage Divider
R53	15KΩ 20%	½	6R2119	BTS-15K	Voltage Divider
R54	47KΩ 20%	½	6R6056	BTS-47K	AGC Network
R55	10KΩ	½	6R6054	BTS-10K	AGC Network
R56	100KΩ 20%	½	6R6075	BTS-100K	Voltage Divider
R57	12KΩ	½	6R6394	BTS-12K	AGC Rect. Cathode
R58	1 Meg. 20%	½	6R6004	BTS-1 Meg.	AGC Rect. Grid
R59	470Ω 20%	½	6R3949	BTS-470	AGC Rect. Cathode
R60	10KΩ	½	6R6320	BTS-10K	Voltage Divider
R61	82KΩ	½	6R5644	BTS-82K	Isolation
R62	100KΩ 20%	½	6R6075	BTS-100K	Sound IF Grid
R63	15KΩ 20%	½	6R2119	BTS-15K	Voltage Divider
R64	100KΩ 20%	½	6R6075	BTS-100K	Sound IF Screen
R65	2700Ω	½	6R5577	BTS-2700	Sound IF Plate Decoupling
R66	47Ω 20%	½	6R2108		Balancing
F67	39KΩ	½	6R6487	BTS-39K	De-emphasis
R68	1000Ω	½	6R6229	BTS-1000	Balancing
R69	1500Ω	½	6R6038	BTS-1500	Balancing
R70	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R71	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R72	2.2 Meg. 20%	½	6R3927	BTS-2.2 Meg.	Tone Compensation
R73	100KΩ 20%	½	6R6075	BTS-100K	1st AF Grid
R74	1000Ω 20%	½	6R6301	BTS-1000	1st AF Cathode
R75	82KΩ	½	6R5644	BTS-82K	1st AF Plate
R76	15KΩ	½	6R6477	BTS-15K	2nd AF Cathode
R77	100KΩ	½	6R6031	BTS-100K	Voltage Divider
R78	4.7 Meg. 20%	½	6R2122	BTS-4.7 Meg.	2nd AF Grid
R79	82KΩ	½	6R5644	BTS-82K	2nd AF Plate
R80	1.5 Meg.	½	6R6460	BTS-1.5 Meg.	Squelch Rect. Load
R81	100KΩ 20%	½	6R6075	BTS-100K	Squelch Rect. Load
R82	470KΩ 20%	½	6R6032	BTS-470K	Output Grid-See Note 2
R83	330Ω	1	6R6254	BTA-330	Output Cathode
R84	270KΩ	½	6R6414	BTS-270K	Sync. Sep. Cathode
R85	1000Ω	½	6R6329	BTS-1000	Sync. Sep. Cathode
R86	18KΩ	½	6R5591	BTS-18K	Sync. Sep. Grid
R87	470KΩ 20%	½	6R6032	BTS-470K	Sync. Sep. Plate
R88	6800Ω	2	6R5690	BT-2-6800	Sync. Sep. Plate
R89	6800Ω	½	6R6428	BTS-6800	Integrator
R90	4700Ω 20%	½	6R6039	BTS-4700	Integrator
R91	180KΩ	½	6R6444	BTS-180K	Vert. Osc. Grid
R92	560KΩ	½	6R5697	BTS-560K	Vert. Osc. Plate
R93	47KΩ 20%	½	6R6056	BTS-47K	Vert. Osc. Plate Decoupling
R94	220KΩ	½		BTS-220K	Voltage Divider-See Note 3
R95	180KΩ	½	6R6444	BTS-180K	Feedback-See Note 4
R96	100Ω 20%	½	6R6018		Parasitic Supp.
R97	1 Meg.	½	6R6046	BTS-1 Meg.	Vert. Output Grid
R98	100Ω	1	6R6415	BW-1-100	Vert. Output Cathode
R99	100Ω	½	6R6326		Parasitic Supp.-See Note 5
R100	33KΩ	2	6R5798	BT-2-33K	Vert. Output Screen-See Note 6
R101	4000Ω	10	17K790902	AB-4000	Vert. Output Plate
R102	33KΩ	2	6R5768	BT-2-33K	Voltage Divider
R103	15KΩ	1	6R6431	BTA-15K	Voltage Divider
R104	47KΩ 20%	½	6R6056	BTS-47K	Feedback
R105	220KΩ	2	6R488034	BT-2-220K	Voltage Divider
R106	10KΩ	½	6R6320	BTS-10K	Voltage Divider
R107	220Ω	1	6R6389	BW-1-220	Focus Coil Shunt-See Note 7
R108	2400Ω	12	17K791172	DG-2400	Series Focus Control-See Note 7-Wire Wound
R109	2400Ω	12	17K791656	DG-2400	Focus Coil Shunt-Wire Wound
R110	1600Ω	10	17K791657		Series Focus Control-Wire Wound
R111	10KΩ 20%	½	6R6054	BTS-10K	Sync. Clipper Cathode
R112	470Ω	½	6R6090	BTS-470	Sync. Clipper Plate
R113	3300Ω	½	6R5581	BTS-3300	Horiz. Osc. Cathode
R114	10KΩ	½	6R6320	BTS-10K	Horiz. Osc. Cathode
R115	47KΩ	½	6R6048	BTS-47K	Horiz. Osc. Grid
R116	47KΩ 20%	½	6R6056	BTS-47K	Horiz. Osc. Plate
R117	100KΩ	1	6R6328	BTA-100K	Horiz. Osc. Plate
R118	1800Ω	½	6R2089	BTS-1800	Horiz. Peaking
R119	270KΩ	½	6R6414	BTS-270K	Horiz. Output Grid
R120	100Ω 20%	½	6R6018		Parasitic Supp.
R121	100Ω 20%	½	6R6018		Parasitic Supp.
R122	100Ω	10	17A790898	AB-100	Horiz. Output Cathode-Wire Wound
R123	5000Ω	5	17K791597	AB-5000	Horiz. Output Screen-Wire Wound
R124	47Ω	1	6R5583		Parasitic Supp.
R125	47Ω	1	6R5583		Parasitic Supp.

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R126	330Ω	2	6R488037	BW-2-330	Hum Balancing
R127	100Ω	2	6R3922	BT-2-100	Hum Balancing
R128	27KΩ	½	6R6434	BTS-27K	HV Output Grid
R129	270KΩ	½	6R6414	BTS-270K	HV Output Grid
R130	330Ω 20%	½	6R6010		Parasitic Supp.
R131	3900Ω	5	17K790901	AB-4000	HV Regulator Plate-Wire Wound
R132	470Ω 20%	½	6R3949	BTS-470	HV Regulator Cathode
R133	100Ω 20%	½	6R6018		Parasitic Supp.
R134	68KΩ	½	6R6001	BTS-68K	HV Regulator Grid
R135	470KΩ 20%	½	6R6032	BTS-470K	Booster Filter
R136	15KΩ	1	6R6431	BTA-15K	Decoupling
R137	1000Ω 20%	2	6R476004	BW-2-1000	Filter
R138	1000Ω 20%	2	6R476004	BW-2-1000	Filter
R139	3000Ω	10	17K790900	AB-3000	Filter-Wire Wound

Note 2. Some models use 1 Meg. resistor in this application.
Note 3. Some models use 180KΩ resistor in this application.
Note 4. Some models use 120KΩ resistor in this application.
Note 5. Not used in all models.
Note 6. Some models use 47KΩ, 1 watt resistor in this application.
Note 7. Used in chassis TS-16 only.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	660VCT	5VAC	6.3VAC	25C790864			
	ⓐ 2.88A	.460ADC	ⓐ 6A	ⓐ 11.4A				
				SEC. 4				
				46VAC				
				ⓐ .15A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	18Ω Tap		25790916				Hor. Osc. Transformer
	ⓐ 8Ω						
	195Ω		24B790890				Hor Lock-In Coil
T4	PRI. 1	3.2Ω	25B790915				Hor. Isolation Trans.
	20Ω						
	PRI. 2						
	20Ω						
T5	53Ω	225Ω	25B790914				Vert. Block Osc. Trans.
T6	410Ω	SEC. 1	24C790958				HV Transformer
	Tap. ⓐ	0Ω					
	116Ω	SEC. 2					
		0Ω					
T7A	21Ω		24D790815				Hor. Deflection Coil
B	920Ω						Vert. Deflection Coil
T8	1300Ω		24B790905				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T9	3.8KΩ	3.6Ω	550Ω	.8Ω	25B790698	A-3825	A-2902 ②	RO-6	② Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD. RES.	RATINGS V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.8Ω	50C791173 ①	ST-118 ⑥	10A31	① Alternate speaker Part No. 50C790699. Alternate 12" speaker Pt. No. 50C791631.
SP2	PM		50C790701	MOD. P10-T ST-107	5A07	⑥ Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.		MOD. P5-V		
SP3	9 3/4"	1"				
SP4	5"					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↺)	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.460A	45Ω	2 Henries	25790952				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	MEISSNER PART No.	NOTES
L2	Ant. Input	0Ω		1X790492		Includes C9, C10, C11, C12, tuning cores.
L3	Ant. Input	0Ω		24K485432		UHF input. Includes winding form and core.
L4	Fil. Choke	0Ω		24A791081		
L5	RF Choke	0Ω		24A791082		
L6	Conv. Trans.	0Ω		24B791590		
L7	Sound Trap	0Ω		24B791592		
L8	Adjacent Channel Sound Trap	0Ω		24B791592		
L9	1st Video IF	.1Ω		24B791590		
L10	Fil. Choke	0Ω		24A791081		
L11	2nd Video IF	.1Ω		24B790849		
L12	Fil. Choke	0Ω		24A791081		
L13	RF Choke	0Ω		24A791081		
L14	3rd Video IF	.1Ω		24B790849		
L15	Fil. Choke	0Ω		24A791081		
L16	RF Choke	0Ω		24A791081		
L17	4th Video IF	.1Ω		24B790849		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L18	Fil. Choke	0Ω		24A791081		
L19	RF Choke	0Ω		24A791081		
L20	5th Video IF	.2Ω	.2Ω	24B790852		
L21	RF Choke	0Ω		24A791081		
L22	Peaking	5Ω		24K790854		Blue dot.
L23	Peaking	6.5Ω		24K790856		Yellow dot.
L24	Peaking	5Ω		24K790854		Blue dot.
L25	Peaking	6.5Ω		24K790856		Yellow dot.
L26	4.5MC Trap	1.6Ω		24B790851		
L27	Peaking	5Ω		24K790855		Wound on 22KΩ resistor. Red dot.
L28	Peaking	6.5Ω		24K790856		Yellow dot.
L29	4.5MC Trap	2.2Ω		24B790853		Orange dot. 25 microhenries.
L30	Sound IF	1.6Ω		24B790851		
L31	Ratio Det. Trans.	3Ω	.5Ω	24B470316		Complete, less shield can.
L32	Fil. Choke	0Ω		24A791081		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA SYLVANIA PART No.		NOTES
M1	0	48B791092	NB-5		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MOTOROLA PART No.		NOTES
M2	Bayonet	6-8	.15A	Brown	65X11854		Type #47
M3	Bayonet	6-8	.15A	Brown	65X11854		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	RF Tuner	1X790700	
M5	Ion Trap	24A790171	Permanent magnet type
M6	Fuse	65K474899	1/8A, 250V
	Cabinet	16K790995	Less bezel and knob escutcheons. Blonde model 16VK7B.
	Cabinet	16K790994	Less bezel and knob escutcheon. Red maghogany consolette. Model 16VK7R.
	Cabinet Back	1X790663	Includes HV shield, picture tube rear cover and line cord. Model 16VK7R, 16VK7B.
	Cabinet	16K791156	Less bezel and knob escutcheon. Red mahogany consolette. Model 12VK15R.
	Cabinet Back	1X791130	Includes line cord. Model 12VK15R, 12VK15B.
	Cabinet	16K791157	Less bezel and knob escutcheons. Blonde Model 12VK15B.
	Knob	36B790997	Channel selector
	Knob	36B790999	Volume
	Lever	45A790996	Contrast
	Safety Glass	61C790865	Used with 16" picture tube
	Safety Glass	1X791127	Used with 12" picture tube
	Socket	9K790947	Picture tube

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

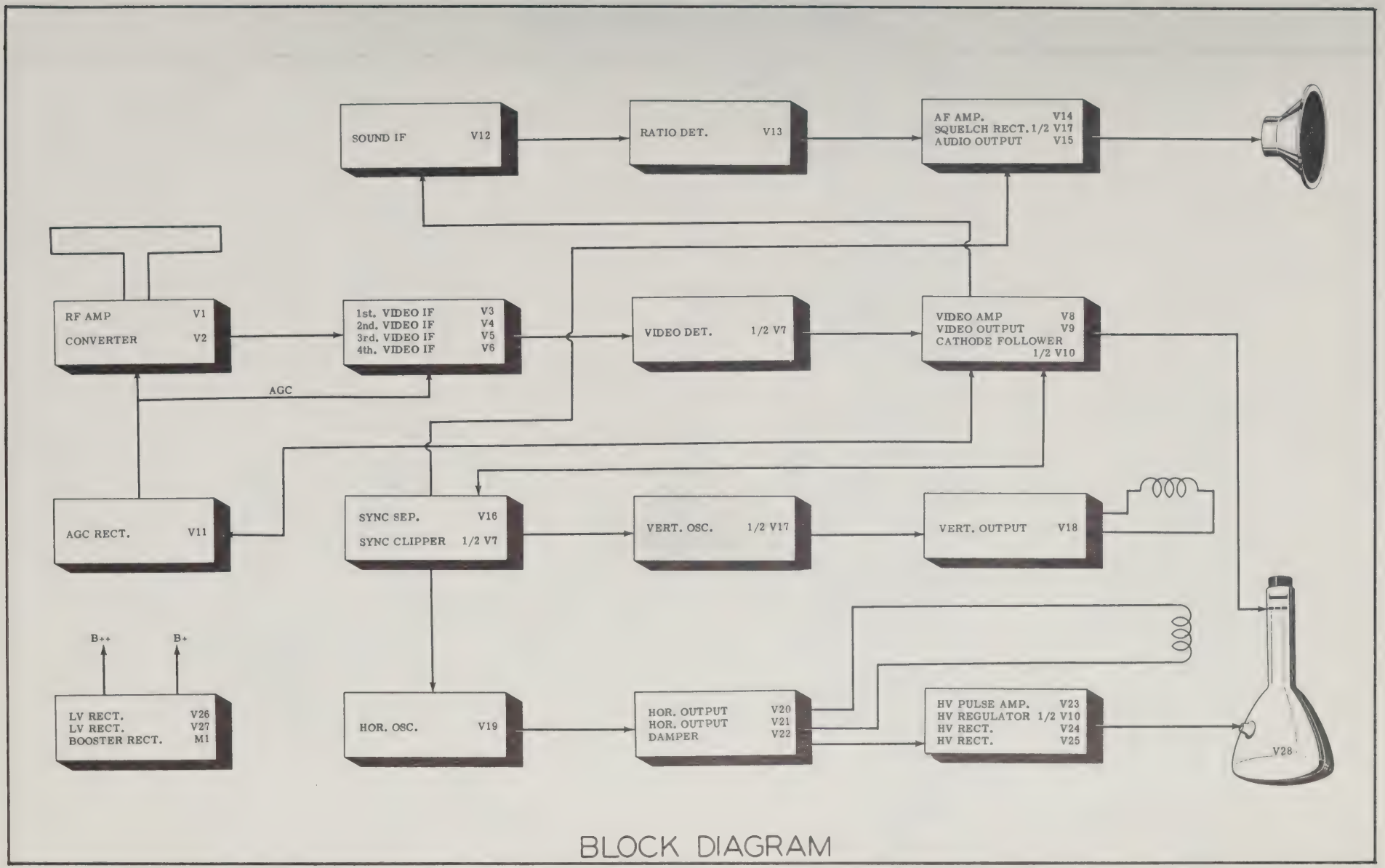
Adjust the horizontal lock in slug (B1) until the picture will remain in synchronism over the entire range of the hold control, with the possible exception of the extreme positions.

HUM CONTROL ADJUSTMENT

If the edges of the raster appear as a sine wave, adjust the hum control (R7) until the edges of the raster are straight.

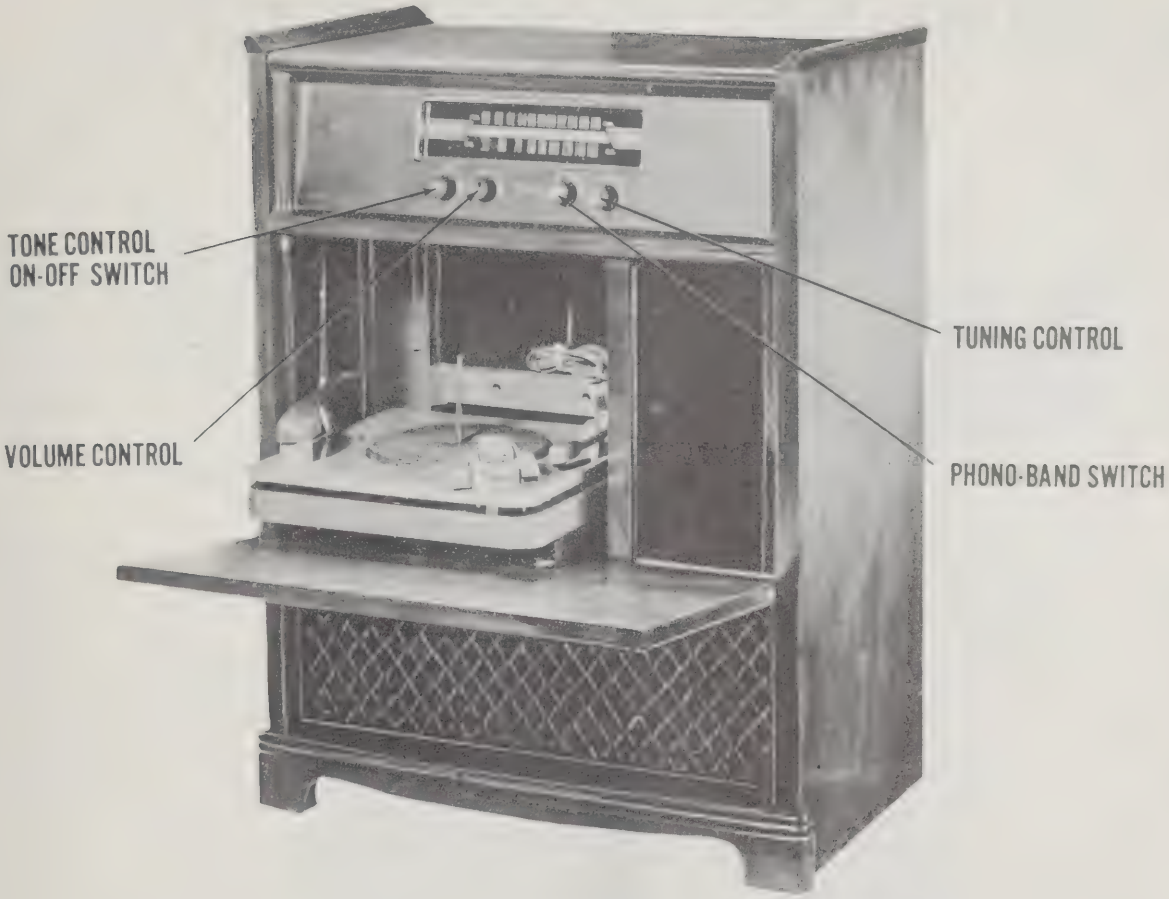
DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Remove eleven screws holding rear cover. Remove cover. (If built-in antenna is connected, leads must be removed from antenna terminals.)
3. Remove two screws holding antenna terminal strip.
4. Remove speaker leads.
5. Remove six 1/4" hex head bolts holding chassis. Remove chassis.
6. Remove four 5/16" hex nuts holding speaker. Remove speaker.



BLOCK DIAGRAM

PHILCO
MODELS 50-1720, 50-1725



PHILCO
MODELS 50-1720, 50-1725

PHILCO MODEL 50-1720

TRADE NAME	Philco, Models 50-1720, 50-1725		
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES (SEVEN)	Types 12AU6 FM RF Amp., 14F8 FM Converter, 12AU7 AM Converter, 6BJ6 1st IF Amp., 6BJ6 2nd IF Amp., 19T8 DET-AVC-AF, 50C6G Power Output		
POWER SUPPLY	105-125 Volts AC	RATING	.52 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT IN MODEL 50-1725 SEE PHILCO MODEL M9C PHOTOFACT SET #74 FOLDER #6. OR RECORD CHANGER MANUAL CM2.
RECORD CHANGER UNIT PHILCO MODEL M20 USED IN MODEL 50-1720

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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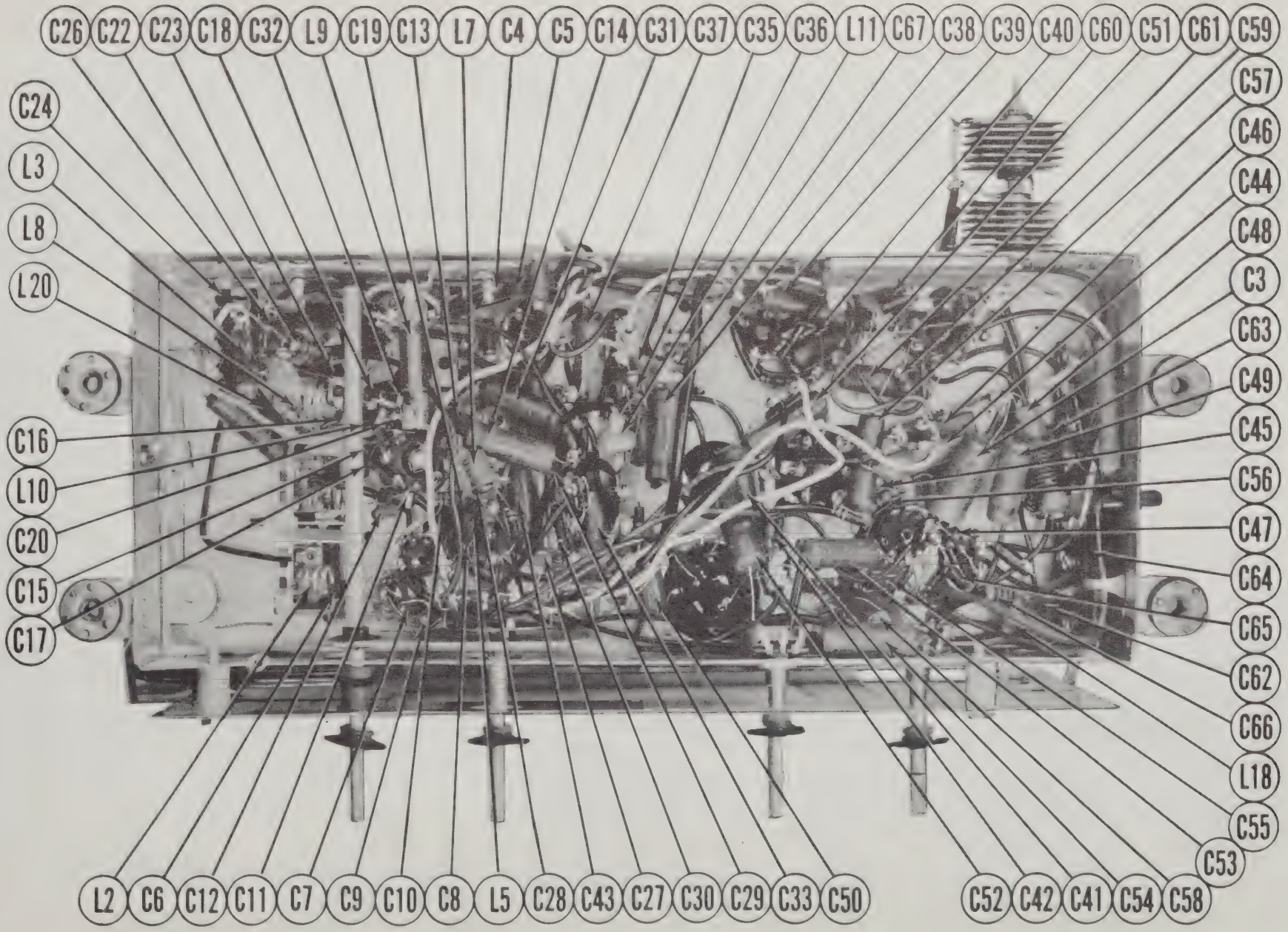
C26
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R19
R20
R22
A4
A11
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R34
R37
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R18
R9
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R7
A13
R5
R3
R4
M6
R6
R11
R10
R23
R21
R36
R1
R26
R31
R33
A1
R2
B
R29
R38
A
R27
R30
R32

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	12AU6	12AU6	7BK	
V2	FM Converter	14F8	14F8	8BW	
V3	AM Converter	12AU7	12AU7	9A	
V4	1st IF Amp.	6BJ6	6BJ6	7CM	
V5	2nd IF Amp.	6BJ6	6BJ6	7CM	
V6	Ratio Det.-DET.-AVC-AF Amp.	19T8	19T8	9E	
V7	Power Output	50C6G	50C6G	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	200	30-2568-28	AFN8E			TVL-3	Voltage Doubler Cap.
C2A	40	300	30-2568-24	AF8842G			D13307	▲ Filter
B	40	300						■ Filter
C	20	300						▲ Filter
D	10	300						Filter
C3	2	50	30-2417-7	E26E6			TVA-12	Stabilizing Cap.
C4	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	Ant. Coupling
C5	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	Ant. Isolation
C6	51		30-1224-2	GP51M	D6-500	GP1K-50	1FM-45	RF Coupling
C7	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM RF Cathode Bypass
C8	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass
C9	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM RF Screen Bypass
C10	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM RF Fil. Bypass
C11	51		30-1224-2	GP51M	D6-500	GP1K-50	1FM-45	RF Coupling
C12	220		62-122001001	GP220M	D6-221	GP2K-220	1FM-325	RF Coupling
C13	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM Conv. Cathode Bypass
C14	.03	400	61-0108	P488-03			TM-13	RF Bypass
C15	220		62-122001001	GP220M	D6-221	GP2K-220	1FM-325	Osc. Feedback
C16	220		62-122001001	GP220M	D6-221	GP2K-220	1FM-325	Osc. Feedback
C17	51		30-1224-2	GP51K	D6-500	GP1K-50	1FM-45	Osc. Grid Cap.
C18	1500		62-215001011	GP1500M	D6-152	GP2L-0015	1FM-215	Osc. Plate Decoupling
C19	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM Conv. Filament Bypass
C20	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM Conv. Filament Bypass
C21	10		62-010009001	GP10K	D6-100	GP1K-10	MS-41	Fixed Trimmer
C22	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Coupling
C23	1500		62-215001011	GP1500M	D6-152	GP2L-0015	1FM-215	Conv. Cathode Bypass
C24	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	Osc. Feedback
C25	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	Tuning Cap. Isolation
C26	220		62-122001001	GP220M	D6-221	GP2K-220	1FM-325	Osc. Grid Cap.
C27	.01	600	61-0120	P688-01	D6-103	821-01	TM-11	FM Conv. Plate Decoupling
C28	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	FM Conv. Plate Decoupling-Note 1
C29	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	AM Conv. Plate Decoupling
C30	1500		62-215001011	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C31	.01	400	61-0120	P488-01	D6-101	821-01	TM-11	AVC Filter
C32	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	AVC Filter
C33	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	AVC Filter
C34	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	RF Bypass - See Note 1
C35	.05	400	61-0122	P488-05			TM-15	RF Bypass
C36	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass
C37	.01	400	61-0120	P488-01	D6-101	821-01	TM-11	RF Bypass
C38	.004	600	61-0179	P688-004	D6-472	811-005	TM-24	1st IF Decoupling
C39	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	2nd IF Cathode Bypass
C40	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	2nd IF Screen Bypass
C41	.01	600	61-0120	P688-01	D6-103	821-01	TM-11	2nd IF Plate Decoupling
C42	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	2nd IF Plate Decoupling
C43	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass
C44	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	Diode Load Cap.
C45	2.2		30-1221-6		D2-2.2			Neutralizing
C46	2700	500	60-20275404	1467-0025	D6-272	GP2M-0027	1FM-23	De-emphasis
C47	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass
C48	.05	400	61-0170	P488-05 †			72P51	Line Isolation
C49	.03	400	45-3500-1	P488-03			TM-13	Line Isolation
C50	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	RF Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R34	470KΩ	½	66-4473340	BTS-470K	Output Grid
R35	220Ω	2	66-1225340	BW-2-220	Output Cathode
R36	10KΩ	1	66-3104340	BTA-10K	Filter
R37A	3200Ω	5	33-3435-23		Filter-Wire Wound-See Note 5
B	180Ω	5			Filter-Wire Wound
R38	50Ω	5	33-1335-84		Surge Limiter-Wire Wound-See Note 4

Note 1. Some models use 10KΩ resistor in this application.
Note 2. Not used in all models.
Note 3. Model 50-1725 uses 47KΩ resistor in this application Part No. 66-3473340.
Note 4. Part No. 33-1334 used in model 50-1725.
Note 5. Part No. 33-3435-17 used in model 50-1725.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T1	2.5KΩ	3.2Ω	180Ω	.5Ω	32-8367-1	A-3849	A-3018	RO-302	Part #32-8367 used in 50-1725.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA GMC PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
SP1A	PM	3.2Ω	36-1610-4	ST-119 ①		① Replace output transformer to match 6-8Ω voice coil.
B	PM	3.2Ω	36-1610-2	ST-119 ① MOD. P10-T	10A31	
	CONE DIA.	V. C. DIA.				
SP2	9 1/2"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	AM Loop Ant.	0Ω		76-3583-13		Part #76-3583-13 used in 50-1725.
L2	FM Ant.	0Ω		32-4158-1		
L3	AM Ant. Loading Coil	1.6Ω		32-4033-11		
L4	RF Choke	.5Ω		32-4061-2		
L5	FM RF Plate	.5Ω		32-4061-2		
L6	FM RF	0Ω		32-4159-1		
L7	RF Choke	.5Ω		32-4061-2		
L8	FM Osc.	0Ω		32-4018-5		
L9	AM Osc.	11Ω		32-4221-1	14-1060	
L10	FM Osc. Plate Choke	.5Ω		32-4061-2		
L11	RF Choke	0Ω				
L12	FM 1st IF	1Ω	1.2Ω	32-4257A		Part #32-4257 used in 50-1725
L13	AM 1st IF	23Ω	20Ω	32-4258A		Part #32-4258 used in 50-1725 (Tertiary winding 32Ω).
L14	FM2nd IF	1Ω	1Ω	32-4372-1A		Part #32-4257-1 used in 50-1725
L15	AM 2nd IF	9Ω	9.8Ω	32-4160-3A	16-6678	Part #32-4160-3 used in 50-1725
L16	Ratio Det. Trans.	1.5Ω	.1Ω	32-4261-1		
L17	AM 3rd IF	14.5Ω	14.5Ω	32-4240-2A		Part #32-4240-2 used in 50-1725
L18	Fil. Choke	1.5Ω		32-4143-4		
L19	IF Bypass	.5Ω		32-4061-2		
L20	RF Choke	1.5Ω		32-4143-4		Not used in model 50-1725.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	.01	400	61-0120	P488-01	D6-103	821-01	TM-11	RF Bypass
C52	.02	400	61-0108	P488-02			TM-12	Audio Coupling
C53	.006	400	45-3500-7	P486-006	D6-562	GP2M-0056	TM-26	Audio Coupling
C54	.006	400	45-3500-7	P488-006	D6-562	GP2M-0056	TM-26	Tone Compensation
C55	51			GP51M	D6-500		1FM-45	AF Amp. Grid Bypass
C56	100			GP100M	D6-101	GP1K-50	1FM-31	AF Amp. Plate Bypass
C57	.006	400	45-3500-7	P488-006	D6-562	GP2M-0056	TM-26	Audio Coupling
C58	.006	400	45-3500-7	P488-006	D6-562	GP2M-0056	TM-26	Tone Compensation
C59	100			GP100M	D6-101	GP1K-100	1FM-31	Output Grid Bypass
C60	220			GP220M	D6-221	GP2K-220	1FM-325	Output Cathode Bypass
C61	.006	600	45-3500-7	P688-006			TM-26	Output Plate Bypass
C62	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	Filament Bypass
C63	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass
C64	.04	400	30-4119	P488-04			TM-14	Line Filter
C65	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	Filament Bypass-See Note 1
C66	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass-See Note 1
C67	100		62-110009001	GP100M	D6-101	GP1K-100	1FM-31	RF Bypass-See Note 1
C68	.1	400		P488-1			TM-1	Phono Isolation
C69	220			GP220M	D6-221	GP2K-220	1FM-325	Cathode Bypass-See Note 2

Note 1. Not used in Model 50-1725.
Note 2. Not used in all models.
† When original part is replaced, wind 11 turns of hook-up wire on replacement and connect as per original.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	2 Meg.	$\frac{1}{2}$	35-5535-17	Q18-139X	T-116	BT-78	Volume control tapped at 1 Meg.
R2	4 Meg.	$\frac{1}{2}$	33-5538-34				Tone control and switch

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R3	1 Meg.	$\frac{1}{2}$	66-5103340	BTS-1 Meg.	FM RF Grid
R4	100Ω	$\frac{1}{2}$	66-1103340	BW-$\frac{1}{2}$-100	FM RF Cathode-Wire Wound
R5	15KΩ	$\frac{1}{2}$	66-3153340	BTS-15K	FM RF Screen
R6	68Ω	$\frac{1}{2}$	66-0683340	BW-$\frac{1}{2}$-68	Bias Network
R7	10KΩ	$\frac{1}{2}$	66-3103340	BTS-10K	FM Conv. Grid
R8	1500Ω	$\frac{1}{2}$	66-2153340	BTS-1500	FM Conv. Cathode
R9	15KΩ	$\frac{1}{2}$	66-3153340	BTS-15K	FM Osc. Grid
R10	22KΩ	$\frac{1}{2}$	66-3223340	BTS-22K	FM Osc. Plate-See Note 1
R11	10KΩ	$\frac{1}{2}$	66-3103340	BTS-10K	FM Conv. Plate Decoupling
R12	68Ω	$\frac{1}{2}$	66-0683340	BTS-68	Bias Network-See Note 2
R13	1 Meg.	$\frac{1}{2}$	66-5103340	BTS-1 Meg.	AM Conv. Grid
R14	1500Ω	$\frac{1}{2}$	66-2153340	BTS-1500	AM Conv. Cathode
R15	15KΩ	$\frac{1}{2}$	66-3153340	BTS-15K	AM Osc. Grid
R16	33KΩ	$\frac{1}{2}$	66-3333340	BTS-33K	AM Osc. Plate
R17	10KΩ	$\frac{1}{2}$	66-3103340	BTS-10K	AM Conv. Plate Decoupling
R18	1 Meg.	$\frac{1}{2}$	66-5103340	BTS-1 Meg.	AVC Network
R19	47Ω	$\frac{1}{2}$	66-0473340	BW-$\frac{1}{2}$-47	1st IF Cathode-Wire Wound
R20	1000Ω	$\frac{1}{2}$	66-2103340	BTS-1000	1st IF Decoupling
R21	3.3 Meg.	$\frac{1}{2}$	66-5333340	BTS-3.3 Meg.	AVC Network
R22	330KΩ	$\frac{1}{2}$	66-4333340	BTS-330K	Diode Load
R23	68Ω	$\frac{1}{2}$	66-0683340	BW-$\frac{1}{2}$-68	Bias Network
R24	68Ω	$\frac{1}{2}$	66-0683340	BW-$\frac{1}{2}$-68	2nd IF Cathode
R25	10KΩ	$\frac{1}{2}$	66-3103340	BTS-10K	2nd IF Screen
R26	1000Ω	$\frac{1}{2}$	66-2103340	BTS-1000	2nd IF Plate Decoupling
R27	47KΩ	$\frac{1}{2}$	66-3473340	BTS-47K	Diode Filter
R28	47KΩ	$\frac{1}{2}$	66-3473340	BTS-47K	De-emphasis
R29	100KΩ	$\frac{1}{2}$	66-4103340	BTS-100K	AVC Network
R30	47KΩ	$\frac{1}{2}$	66-3473340	BTS-47K	Ratio Det. Diode Load
R31	33KΩ	$\frac{1}{2}$	66-3333340	BTS-33K	Tone Compensation-See Note 3
R32	10 Meg.	$\frac{1}{2}$	66-6103340	BTS-10 Meg.	AF Amp. Grid
R33	270KΩ	$\frac{1}{2}$	66-4273340	BTS-270K	AF Amp. Plate

SET 93 FOLDER 8

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA PHILCO PART No.	SYLVANIA PART No.		NOTES
M1	.105A	34-8003-2	ND-5		Part #34-8003-1 used in model 50-1725.
M2	.105A	34-8003-2	ND-5		Part #34-8003-1 used in model 50-1725.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		NOTES
M3	Screw	117			34-2605		Type #120V 7W

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA PHILCO PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	REMARKS
M4A	35-2671-1	LT-2M	T	W61B	A62A	Standard } Model 50-1725
M5	45-1609	U-J	U			Long Play }
M4B	76-4649					Model 50-1720

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M6	Switch	42-1874	Band-Phono
M7	Switch		Phono
M8A	2 Gang Var. Cap.	31-2724-7	(18-510MMF, 20-256MMF (50-1720)
B	2 Gang Var. Cap.	31-2724-3	Model 50-1725
A7 A8	Dual Trimmer	31-6476-18	A7 BC Osc. Adj. A8 BC Ant. Adj.
	Cabinet	10762	Model 50-1720
	Cabinet	10751	Model 50-1725
	Dial Scale	54-5021	Model 50-1720
	Dial Scale	54-5024	Model 50-1725
	Dial Pointer	56-5630-2	
	Knob	54-4376	Four used

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
To set dial pointer turn tuning gang fully closed and set pointer 3 11/16 inches to the right of the left hand end of the dial backplate.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to terminal on antenna terminal strip. Low side to B-.	455KC (400 ∿ Mod.)	AM (CCW)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4, A5, A6	Adjust for maximum output in the order given. Do not repeat these adjustments.
2.		Loop	1600KC	"	Set pointer 9 7/16 to the right of left hand end of dial backplate.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC	"	Tune for max. output	"	A8	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point◇A to B-. The junction of these two resistors is alignment point◇C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1MFD	High side to pin 8 (Grid) of 14F8 (V2). Low side to B-.	9.1MC (Unmod.)	FM (center)	Tuning gang fully closed	DC Probe to Point◇A. Common to B-.	A9, A10 A11, A12 A13	Adjust for maximum deflection.
5.	.1MFD	"	"	"	"	DC Probe to Point◇B Common to Point◇C	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1MFD	High side to pin 8 (Grid) of 14F8 (V2). Low side to B-.	9.1MC (450KC Sweep)	FM (center)	Point of non-interference	Vert. Amp. to Point◇A Low side to B-.	A9, A10 A11, A12 A13	Disconnect stabilizer cap. C3. Adjust for maximum amplitude and symmetry as per Fig 1.
5.	.1MFD	"	"	"	"	Vert. Amp. to Point◇B Low side to B-.	A14	Reconnect capacitor C3. Adjust A14 so 9.1MC occurs at center of crossover lines as per Fig 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	300Ω carbon res.	High side thru 300Ω resistor to terminal 1 of "FM" antenna plug. Low side to B-.	105MC (Unmod.)	FM	Set pointer 8 7/16 to the right of the left hand end of the dial backplate.	DC Probe to Point◇A Common to B-.	A15, A16, A17	Adjust for maximum deflection.
7.	"	"	92MC	"	Set pointer 5 3/8 ins. to the right of the left hand end.	"	L8, L6, L2	Expand or compress coil turns for maximum deflection. Repeat steps 6 and 7 until no further improvement can be made.

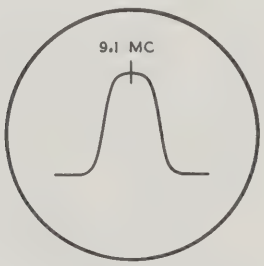


FIG. 1

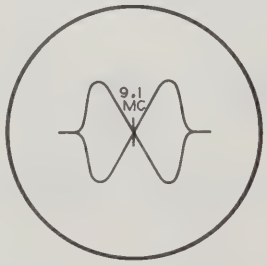
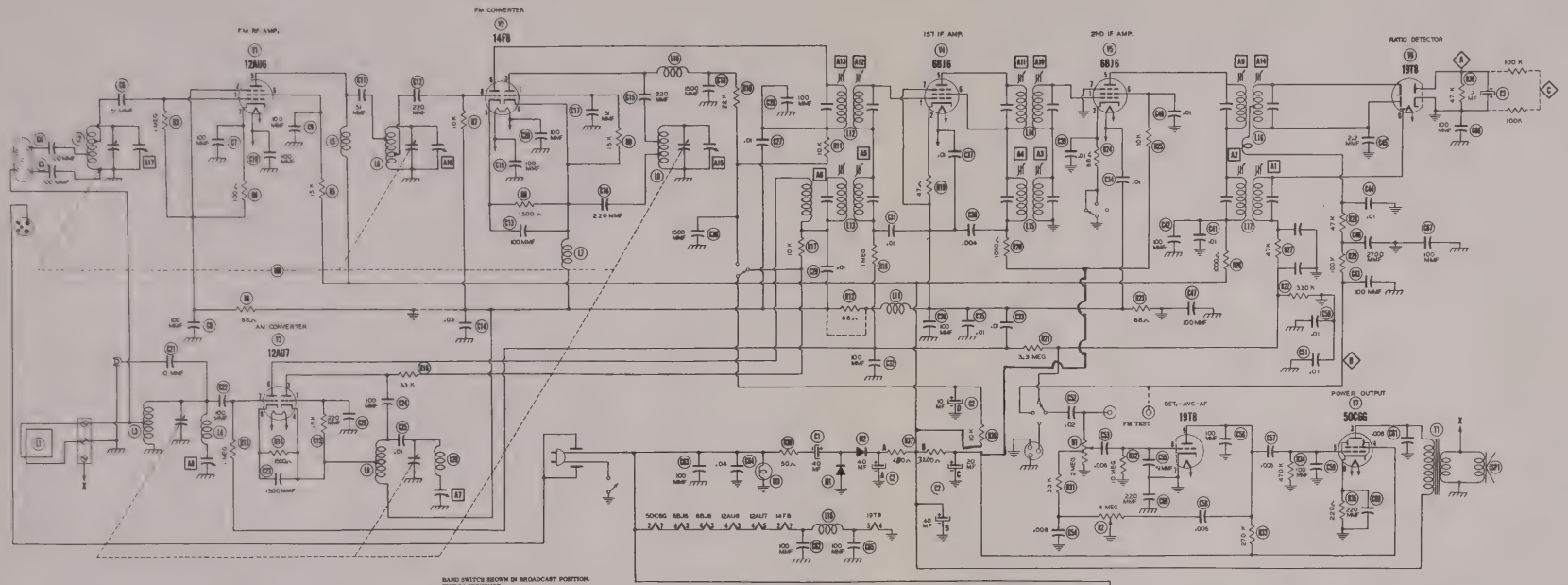


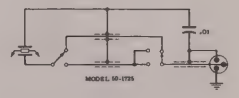
FIG. 2

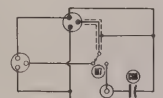


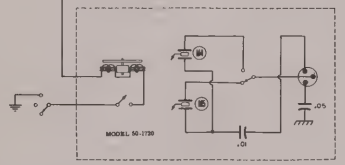
BAND SWITCH SHOWN IN BROADCAST POSITION.
SWITCH SEQUENCE
1 BROADCAST
2 FREQ MOD
3 PBOMO

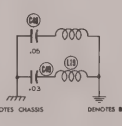
IF = 455 KC AM

IF = 9.1 MC FM









VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
†	V1	12AU6	.3VDC	3.7VDC	46VAC	57VAC	125VDC	125VDC	4.6VDC		
†	V2	14F8	0-1VDC	32VAC	95VDC	3VDC	4.7VDC	125VDC	89VAC	3VDC	
	V3	12AU7	50VDC	0-2.5VDC	2.2VDC	69VAC	32VAC	125VDC	-1VDC	7.7VDC	69VAC
	V4	6BJ6	-.1 VDC	2.6VDC	91VAC	64VAC	169VDC	169VDC	2.1VDC		
	V5	6BJ6	0V.	1VDC	64VAC	70VAC	185VDC	185VDC	0V.		
	V6	19T8	-.7VDC	-1.4VDC	-.7VDC	0V.	89VAC	-.8VDC	0V.	-.8VDC	89VDC
†	V6	19T8	-.7VDC	-1.4VDC	-.7VDC	0V.	89VAC	-.8VDC	0V.	-.8VDC	89VDC
	V7	50C6G	0V.	117VAC	286VDC	185VDC	0V.	0V.	70VAC	117AC	

* TAKEN WITH VACUUM TUBE VOLTMETER.
† TAKEN IN "FM" POSITION.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
†	V1	12AU6	1 Meg.	180Ω	6kΩ	68Ω	7400Ω	315Ω	230Ω		
†	V2	14F8	180Ω	88Ω	750Ω	88Ω	1.8kΩ	750Ω	88Ω	88Ω	
	V3	12AU7	140kΩ	180Ω	6kΩ	68Ω	180Ω	750Ω	4.3 Meg.	1.8kΩ	34Ω
	V4	6BJ6	1.3 Meg.	1kΩ	6kΩ	88Ω	14.5kΩ	14.5kΩ	88Ω		
	V5	6BJ6	1kΩ	68Ω	88Ω	88Ω	14.5kΩ	315Ω	0Ω		
	V6	19T8	Inf.	47kΩ	Inf.	0Ω	1kΩ	330kΩ	0Ω	10 Meg.	47kΩ
†	V6	19T8	Inf.	47kΩ	Inf.	0Ω	1kΩ	330kΩ	0Ω	10 Meg.	47kΩ
	V7	50C6G	0Ω	88Ω	750Ω	13.5kΩ	47kΩ	0Ω	88Ω	330Ω	

† MEASURED FROM OUTPUT OF M1.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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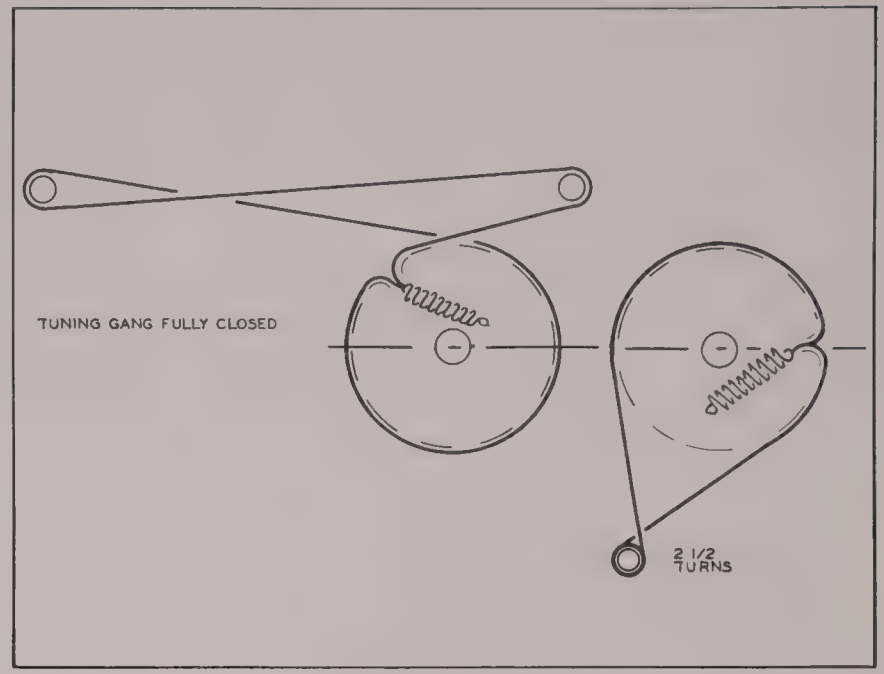
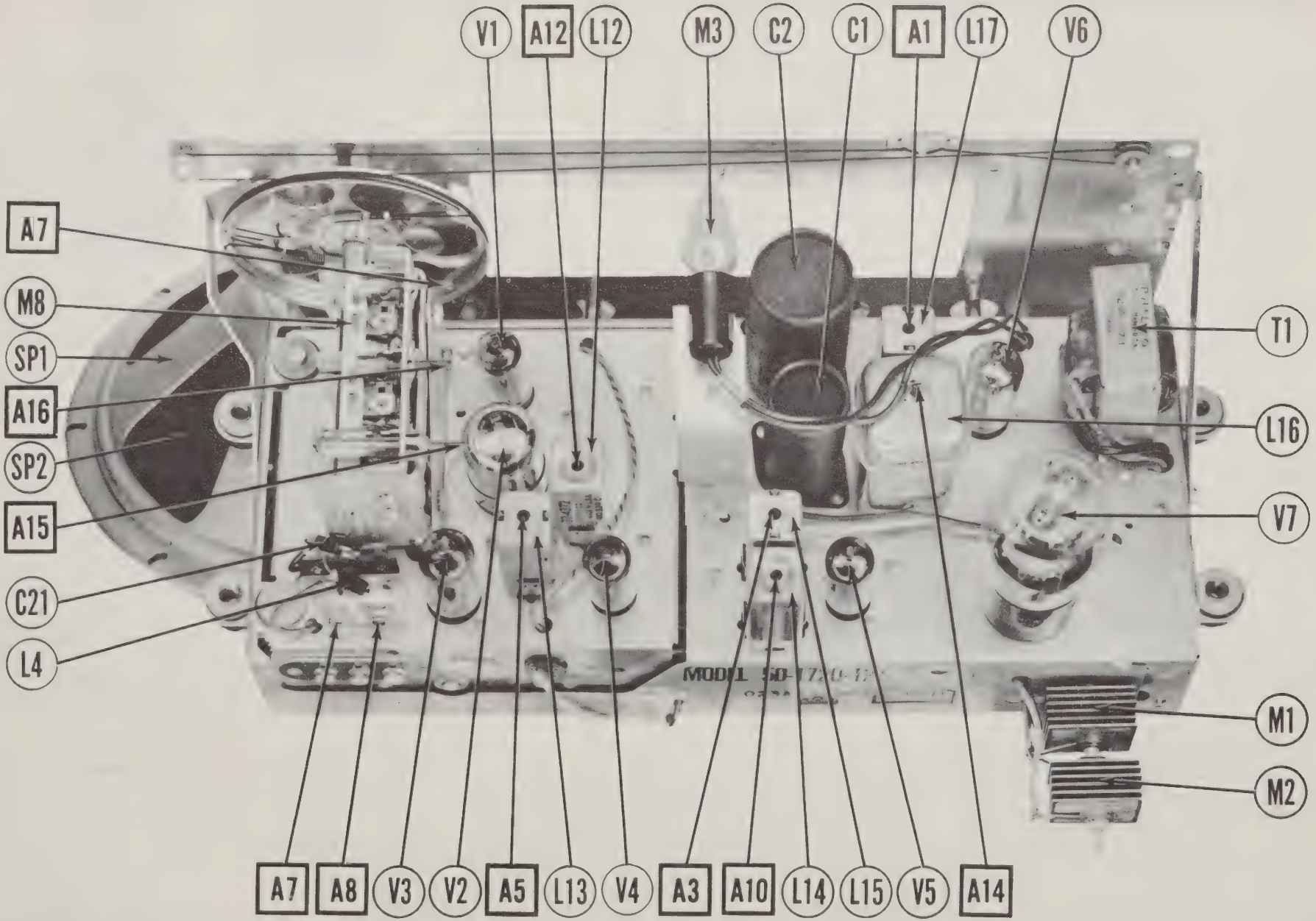
DISASSEMBLY INSTRUCTIONS MODEL 50-1720

1. Remove four push-on type control knobs.
2. Remove 15 screws holding rear cover. Remove cover.
3. Remove phono pickup plug from chassis.
4. Loosen three screws on terminal strip. Remove antenna leads and speaker leads.
5. Disconnect phono motor leads at splices.
6. Remove four 7/16 inch hex-head bolts holding chassis. Remove chassis.
7. Remove four 11/32 inch hex-head nuts holding speaker. Remove speaker.
8. Remove phono pick-up plug from switch box under radio chassis mounting board.
9. Remove two Phillips-head screws holding switch box. Remove box.



DIAL CORD DRIVE


V1
A12
L12
M3
C2
C1
A1
L17
V6
A7
M8
SP1
A16
SP2
A15
C21
L4
T1
L16
V7
M1
M2
A7
A8
V3
V2
A5
L13
V4
A3
A10
L14
L15
V5
A14

PHOTOFACT* Folder

RCA VICTOR MODELS T100, T120, T121, TC124, TC125, TC127, 9T246, 9T256, 9TC245, 9TC247, 9TC249

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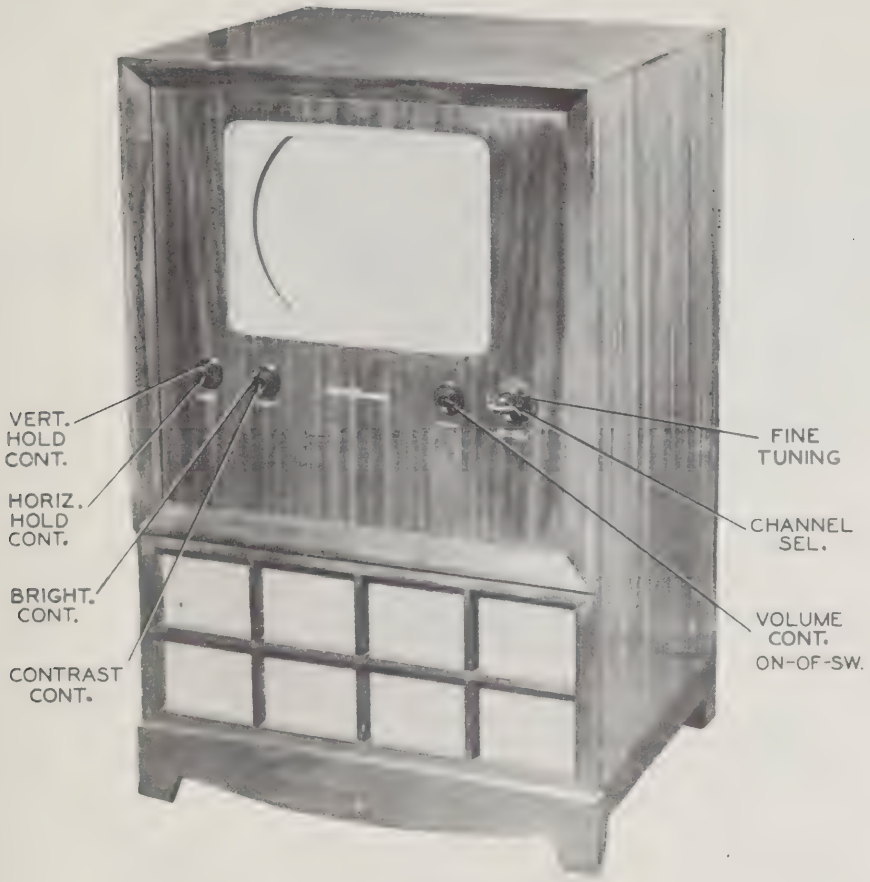

RCA VICTOR MODEL 9TC245

TRADE NAME	RCA Victor Models T100 (Ch. KCS38), T120, T121 (Ch. KCS34C), TC124, TC125, TC127 (Ch. KCS34, B), 9T246 (Ch. KCS38), 9T256 (Ch. KCS38C), 9TC245 (Ch. KCS34B), 9TC247, 9TC249 (Ch. KCS34, B)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty Four Twenty Five (Ch. KCS38C)
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	Channels 2 thru 13 — RATING 1.9 Amp. @ 117 Volts AC

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 19
Horiz. Sweep Circuit Adjustment 20
Horiz. Oscillator Waveform Adjustment 20
Parts List and Description 13, 14, 15, 16
Photographs
Cabinet-Rear View 20
Capacitor Identification 11, 18
Photographs (continued)
Chassis-Top View 3, 19
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification ..4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

RCA VICTOR MODELS T100, T120, T121, TC124, TC125, TC127, 9T246, 9T256, 9TC245, 9TC247, 9TC249

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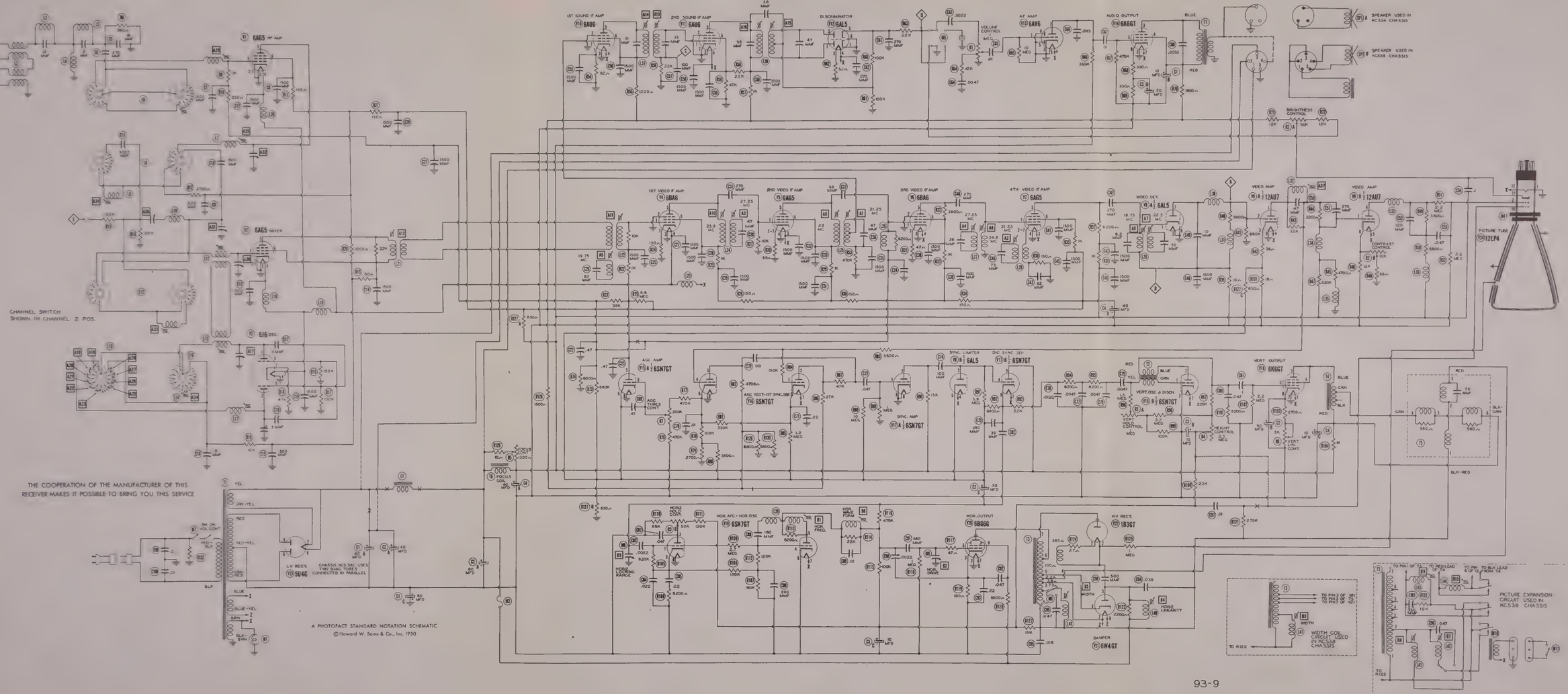
CHANNEL SWITCH
SHOWN IN CHANNEL 2 POS.
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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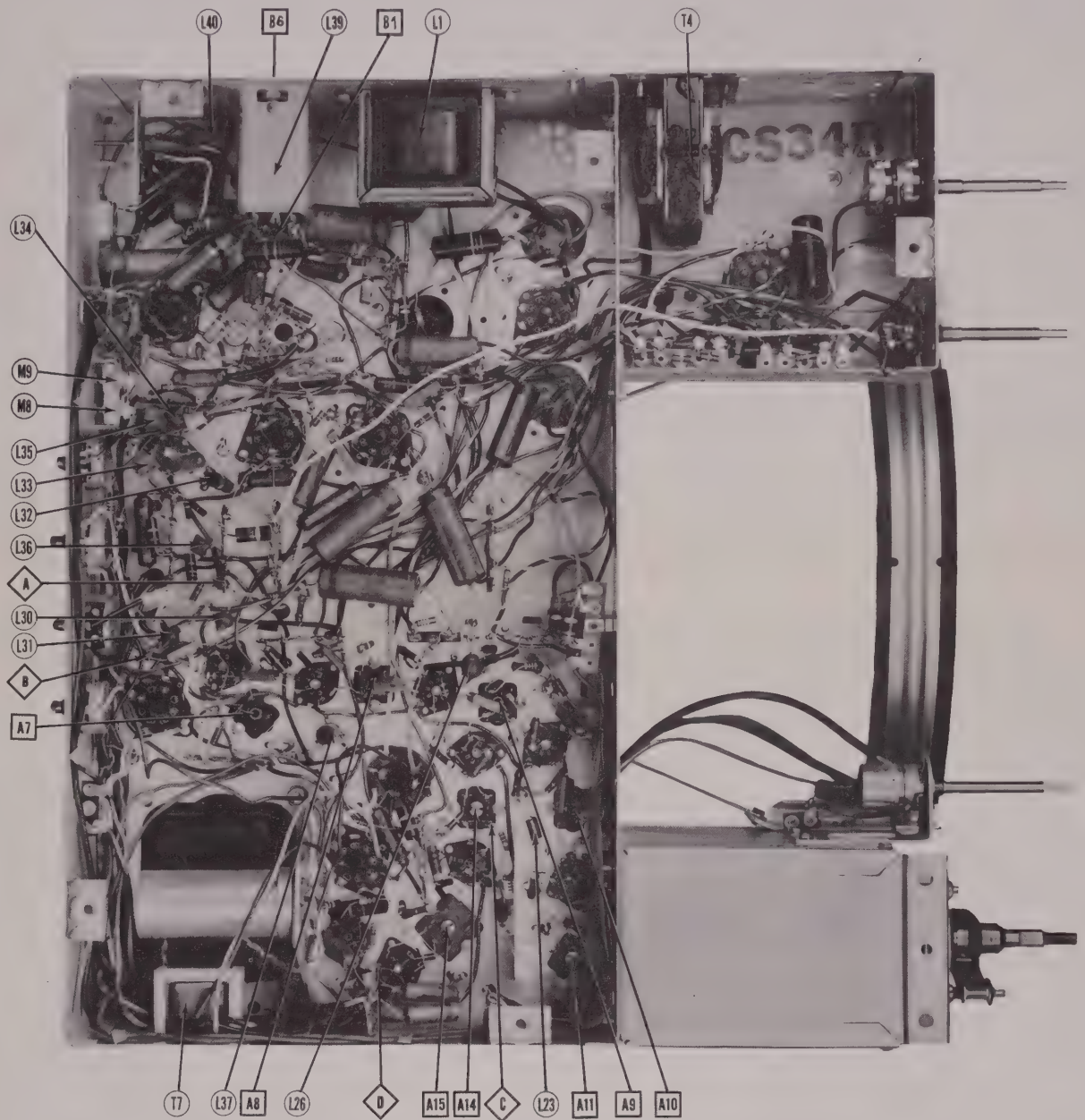
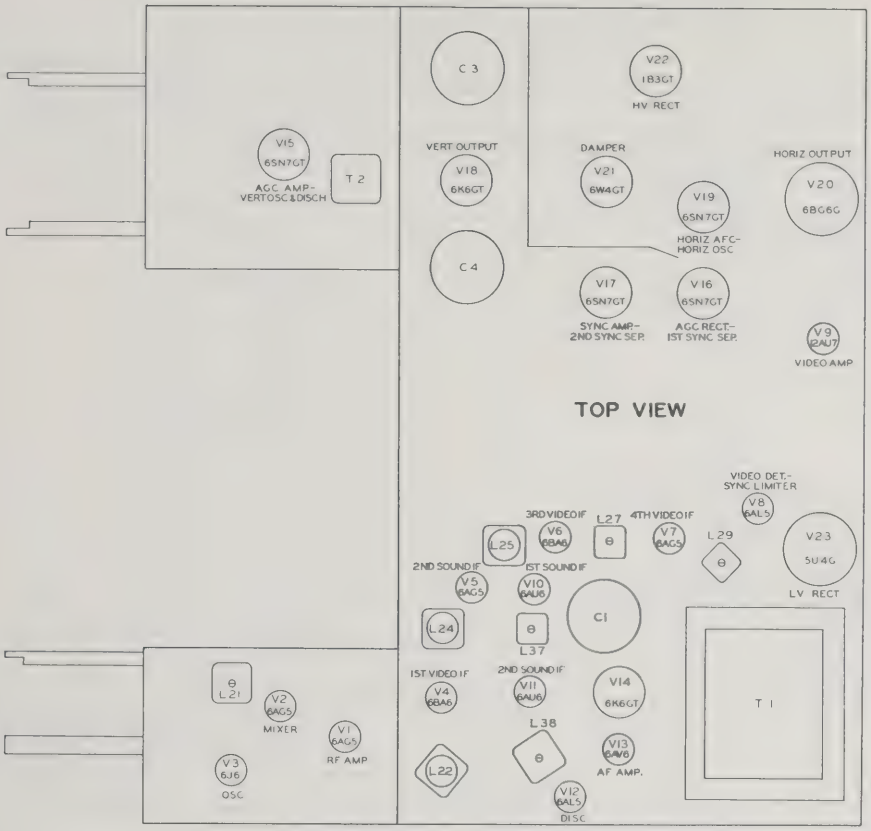
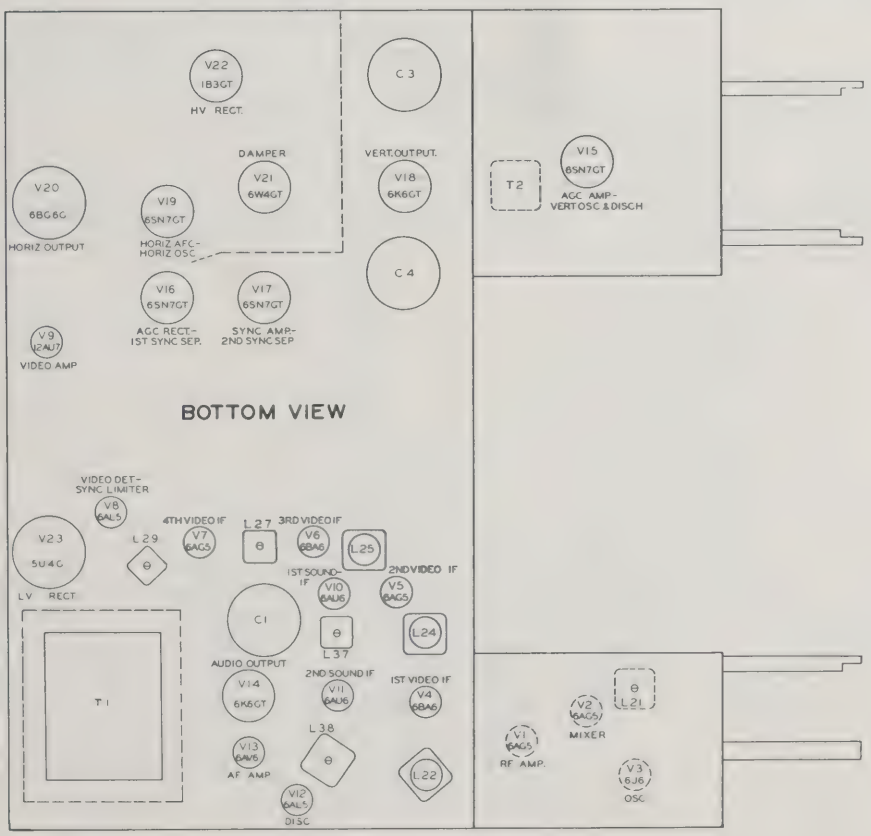
CHASSIS KCS 38C USES
TWO 5U4G TUBES
CONNECTED IN PARALLEL
1ST SOUND IF AMP
2ND SOUND IF AMP
DISCRIMINATOR
VOLUME CONTROL
AF AMP
AUDIO OUTPUT
SPEAKER USED IN KCS34 CHASSIS
SPEAKER USED IN KCS38 CHASSIS
BRIGHTNESS CONTROL
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
4TH VIDEO IF AMP
VIDEO DET
VIDEO AMP
CONTRAST CONTROL
PICTURE TUBE
AGC AMP
AGC THRES CONT
AGC RECT-1ST SYNC SEP
SYNC. AMP
SYNC. LIMITER
2ND SYNC SEP
VERT. OSC. & DISCH.
VERT HOLD CONTROL
HEIGHT CONTROL
VERT. OUTPUT
VERT. CONT.
HORIZ HOLD CONTROL
HORIZ WIDTH CONTROL
HOR. AFC-HOR. OSC
HOR. PHASE
HOR. DRIVE
HOR. OUTPUT
H.V. RECT.
DAMPER
HORIZ LINEARITY
WIDTH
WIDTH COIL CIRCUIT USED IN KCS38 CHASSIS
PICTURE EXPANSION CIRCUIT USED IN KCS38 CHASSIS
TO R122
93-9

CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V19) from its socket.

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to prevent erroneous indications.
During video IF alignment the common lead of the VTVM is connected to approximately -120 volts. Avoide grounding or touching the VTVM case.
Remove the AGC amplifier tube (V15) from its socket and connect a 250KΩ potentiometer between pins 5 and 6 of V15 socket.
If the grid circuit of the third video IF amplifier (V6) is returned to the junction of R23 and C23, adjust the potentiometer to read -6.5 volts on VTVM connected between pin 5 of V15 and chassis.
If the third video IF grid circuit is returned to the junction of R74 and C22, increase the bias to -12 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	21.25MC (Unmod.)	Any	DC Probe to Point (A) Common to Point (B)	A1, A2	Adjust for MINIMUM output.
2.	Direct	"	27.25MC (Unmod.)	"	"	A3, A4	"
3.	Direct	"	19.75MC (Unmod.)	"	"	A5, A6	"
4.	Direct	"	22.5MC (Unmod.)	"	"	A7	Adjust for maximum deflection.
5.	Direct	"	24.6MC (Unmod.)	"	"	A8	"
6.	Direct	"	22MC (Unmod.)	"	"	A9	"
7.	Direct	"	25.9MC (Unmod.)	"	"	A10	"

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to an ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25MC (10MC SWP)	22.05MC 24.75MC	Any	Vert. Amp. to Point (A) Low side to chassis.	A11, A12	Shunt 300Ω resistors across the primaries of L24, L25, L27 and L29 (A7 thru A10). Adjust for response curve similar to Fig 1 with markers as shown. Remove shunts.
9.	Direct	"	"	22.1MC 25.0MC 25.75MC	"	"		Check for response curve similar to Fig 2. If necessary retouch A7 thru A10 for proper response. If large adjustment is required, repeat the trap adjustments.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	21.25MC (1MC SWP)	21.25MC	Any	Vert. Amp. thru 33KΩ to Point (C) Low side to chassis.	A13, A14	Adjust for maximum amplitude and symmetry as per Fig 3.
11.	.01MFD	"	"	"	"	Vert. Amp. to Point (D) Low side to chassis.	A15, A16	Adjust A15 so 21.2MC occurs at the center of the diagonal line as per Fig 4. Adjust A16 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Replace the local oscillator tube (V3).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	215.75MC (Unmod.)	13	DC Probe to Point (D) Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A18	
			203.75MC	11		A19	
			197.75MC	10		A20	
			191.75MC	9		A21	
			185.75MC	8		A22	
			179.75MC	7		A23	
			87.75MC	6		A24	
			81.75MC	5		A25	
			71.75MC	4		A26	
			65.75MC	3		A27	
			59.75MC	2		A28	

FIG.1

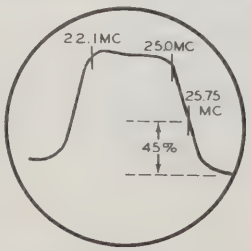


FIG.2

FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Set the bias potentiometer to -3.5 volts.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	177MC (10MC SWP)	175.25MC 179.75MC	7	Vert. Amp. to Point E. Low side to chassis.	A29, A30, A31, A32	Adjust for maximum amplitude and symmetry with markers above 90% as per Fig 5.
14.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A29	Adjust for maximum response and minimum slope of top part of curve.
15.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"		Check for response curve similar to Fig 5. If markers fall below 80% on any channel, make slight adjustment of A29, A30, A31, and A32 with channel switch set for that channel. Recheck all high band channels to see that they have not been seriously effected.
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			213MC (10MC SWP)	211.25MC 215.75MC	13			
16.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A33, A34, A35, A36	Adjust for response curve similar to Fig 5 with markers above 90%.
17.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check for response curve similar to Fig 5. If markers fall below 80% on any channel, make slight adjustment of A33, A34, A35 and A36 with channel switch set for that channel. Recheck all low band channels to see that they have not been seriously effected.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	.01MFD	High side to pin 2 (Grid) of 12AU7 (V9). Low side to chassis.	Not used	4.5MC (400 ∿ AM Mod.)	Any	Vert. Amp. to pin 2 (Grid) of picture tube. Low side to chassis.	A37	Adjust for minimum 400 ∿ response on scope.

AGC THRESHOLD ADJUSTMENT

Connect the vertical amplifier of an oscilloscope between pin 1 of 12AU7 (V9) and chassis.
Turn the set on and tune in a TV station.
Turn the contrast control to maximum clockwise.
Adjust the AGC threshold control for maximum response without clipping the sync pulses.

FIG. 4

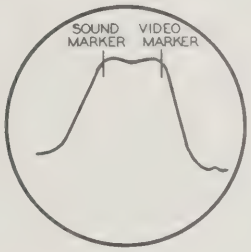
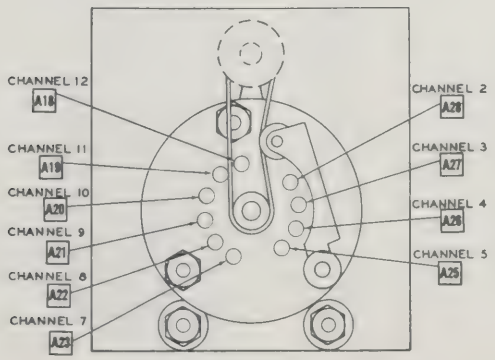


FIG. 5



OSCILLATOR ALIGNMENT POINTS

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.8VDC	0V.	0V.	6.3VAC	70VDC	105VDC	0V.		
V 2	6AG5	-1VDC	0V.	0V.	6.3VAC	95VDC	95VDC	0V.		
V 3	6J6	90VDC	90VDC	6.3VAC	0V.	§-3.2VDC	§-3.2VDC	0V.		
V 4	6BA6	.2VDC	0V.	0V.	.6.3VAC	90VDC	90VDC	1.6VDC		
V 5	6AG5	0V.	.6VDC	6.3VAC	0V.	90VDC	90VDC	.6VDC		
V 6	6BA6	.1VDC	0V.	0V.	6.3VAC	50VDC	90VDC	.6VDC		
V 7	6AG5	0V.	1.1VDC	6.3VAC	0V.	150VDC	105VDC	1.1VDC		
V 8	6AL5	▲0V.	#.5VDC	0V.	6.3VAC	#0V.	0V.	▲.2VDC		
V 9	12AU7	▲90VDC	▲.1VDC	▲2VDC	6.3VAC	6.3VAC	▲240VDC	▲100VDC	▲100VDC	0V.
V 10	6AU6	-.1VDC	0V.	0V.	6.3VAC	100VDC	100VDC	.5VDC		
V 11	6AU6	-.2VDC	0V.	0V.	6.3VAC	100VDC	50VDC	0V.		
V 12	6AL5	0V.	-.3VDC	1.1VAC	6.3VAC	.1VDC	0V.	-.3VDC		
V 13	6AV6	-.5VDC	0V.	0V.	6.3VAC	0V.	0V.	85VDC		
V 14	6K6GT	Inf.	0V.	▲180VDC	▲190VDC #-6VDC #-18VDC	▲0V.	0V.	6.3VAC	▲14VDC	
V 15	6SN7GT	▲-20VDC	▲120VDC	▲0V.	#55VDC	#0V.	6.3VAC	0V.		
V 16	6SN7GT	#23VDC	#125VDC	#32VDC	-30VDC	70VDC	-23VDC	6.3VAC	0V.	
V 17	6SN7GT	0V.	140VDC	0V.	#-.5VDC	#270VDC	#11VDC	6.3VAC	0V.	
V 18	6K6GT	▲0V.	0V.	▲320VDC	▲320VDC	▲0V.	▲14VDC	6.3VAC	▲35VDC ▲48VDC	
V 19	6SN7GT	▲-2.6VDC	▲90VDC	▲-3.7VDC	▲-38VDC	▲175VDC	▲0V.	6.3VAC	0V.	
V 20	6BG6G	▲0V.	0V.	▲10VDC	▲0V.	▲0V.	▲10VDC	6.3VAC	▲270VDC	TOP CAP *
V 21	6W4GT	0V.	0V.	300VDC	0V.	200VDC	Inf.	300VDC	300VDC	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	5U4G	0V.	220VDC	0V.	355VAC	0V.	355VAC	0V.	220VDC	
V 24	12LP4	0V.	.9VDC	PIN 10 300VDC	PIN 11 90VDC	PIN 12 6.3VAC				

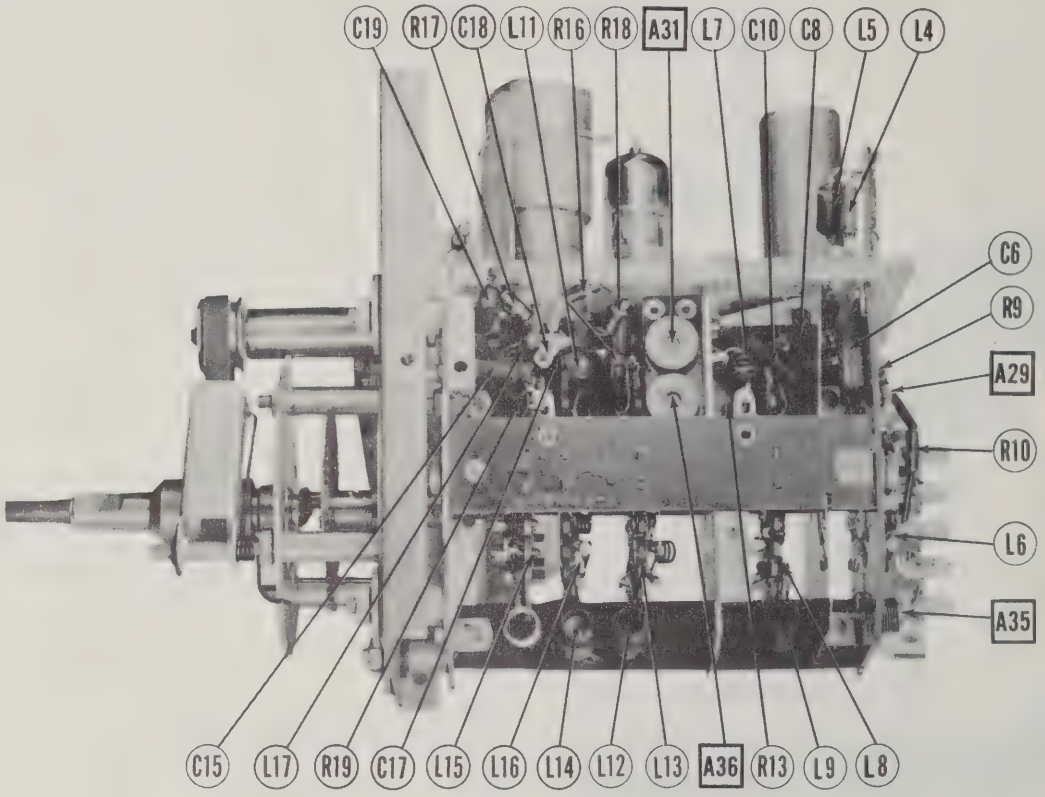
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
▲ MEASURED FROM PIN 3 OF V15.
MEASURED FROM PIN 5 OF V8.

RESISTANCE READINGS

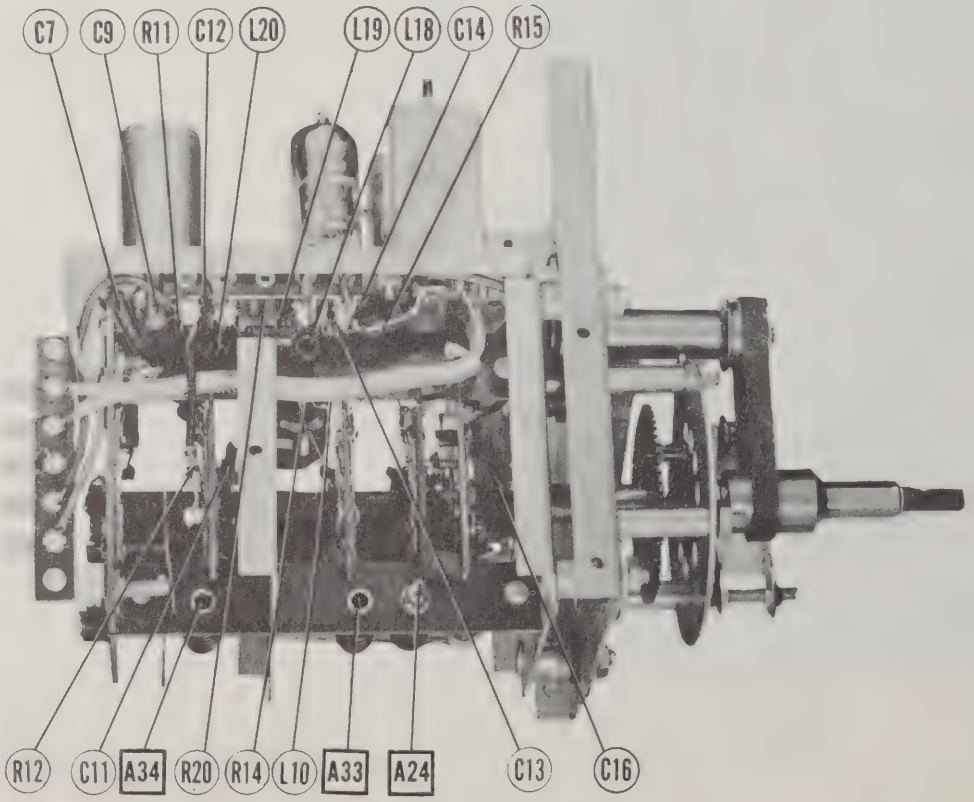
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	8.5KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†1.3KΩ	0Ω		
V 2	6AG5	95KΩ	0Ω	0Ω	.1Ω	†2.3KΩ	†2.3KΩ	0Ω		
V 3	6J6	†12KΩ	†12KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6BA6	46KΩ	0Ω	0Ω	.1Ω	†2.4KΩ	†2.4KΩ	150Ω		
V 5	6AG5	10KΩ	68Ω	.1Ω	0Ω	†2.3KΩ	†2.3KΩ	68Ω		
V 6	6BA6	46KΩ	0Ω	0Ω	.1Ω	†6KΩ	†2KΩ	47Ω		
V 7	6AG5	.2Ω	150Ω	.1Ω	0Ω	†10KΩ	†2KΩ	150Ω		
V 8	6AL5	▲10Ω	#3.9Meg.	0Ω	.1Ω	#0Ω	0Ω	▲5.6KΩ		
V 9	12AU7	7KΩ	680KΩ	▲60Ω	.1Ω	.1Ω	†12.5KΩ	4.8KΩ	6.5KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	82Ω		
V 11	6AU6	22KΩ	0Ω	0Ω	.1Ω	†1.9KΩ	†18KΩ	0Ω		
V 12	6AL5	0Ω	100KΩ	2.5Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†330KΩ		
V 14	6K6GT	Inf.	0Ω	†3.2KΩ	†2.7KΩ	▲470KΩ	Inf.	.1Ω	▲660Ω	
V 15	6SN7GT	▲2.8 Meg.	▲1.5 Meg.	▲0Ω	310KΩ 290KΩ	†50KΩ	#0Ω	.1Ω	0Ω	
V 16	6SN7GT	150KΩ	†29KΩ	290KΩ	12.5KΩ	†7.5KΩ	65KΩ	.1Ω	0Ω	
V 17	6SN7GT	1 Meg.	†15KΩ	0Ω	#3.9Meg.	†100Ω	#6.8KΩ	.1Ω	0Ω	
V 18	6K6GT	Inf.	0Ω	†1.6KΩ	†1.6KΩ	▲2.2 Meg.	4KΩ	.1Ω	▲7.7KΩ ▲2.7KΩ	
V 19	6SN7GT	▲900KΩ	▲65KΩ	▲330KΩ	▲300KΩ	▲250KΩ	▲0Ω	.1Ω	0Ω	
V 20	6BG6G	Inf.	0Ω	▲100Ω	1.2KΩ	▲1 Meg.	▲100Ω	.1Ω	†6.8KΩ	TOP CAP ¶100Ω
V 21	6W4GT	Inf.	Inf.	250KΩ	Inf.	†85Ω	Inf.	250KΩ	250KΩ	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ¶440Ω
V 23	5U4G	Inf.	4.8KΩ	Inf.	1.2KΩ	Inf.	1.2KΩ	Inf.	4.8KΩ	
V 24	12LP4	0Ω	▲1.1Meg.	PIN 10 ¶300KΩ	PIN 11 13KΩ	PIN 12 .1Ω				

TV - PHONO SWITCH IN "TV" POSITION.
† MEASURED FROM PIN 8 OF V23.
# MEASURED FROM PIN 5 OF V8.
▲ MEASURED FROM PIN 3 OF V15.
¶ MEASURED FROM PIN 3 OF V21.

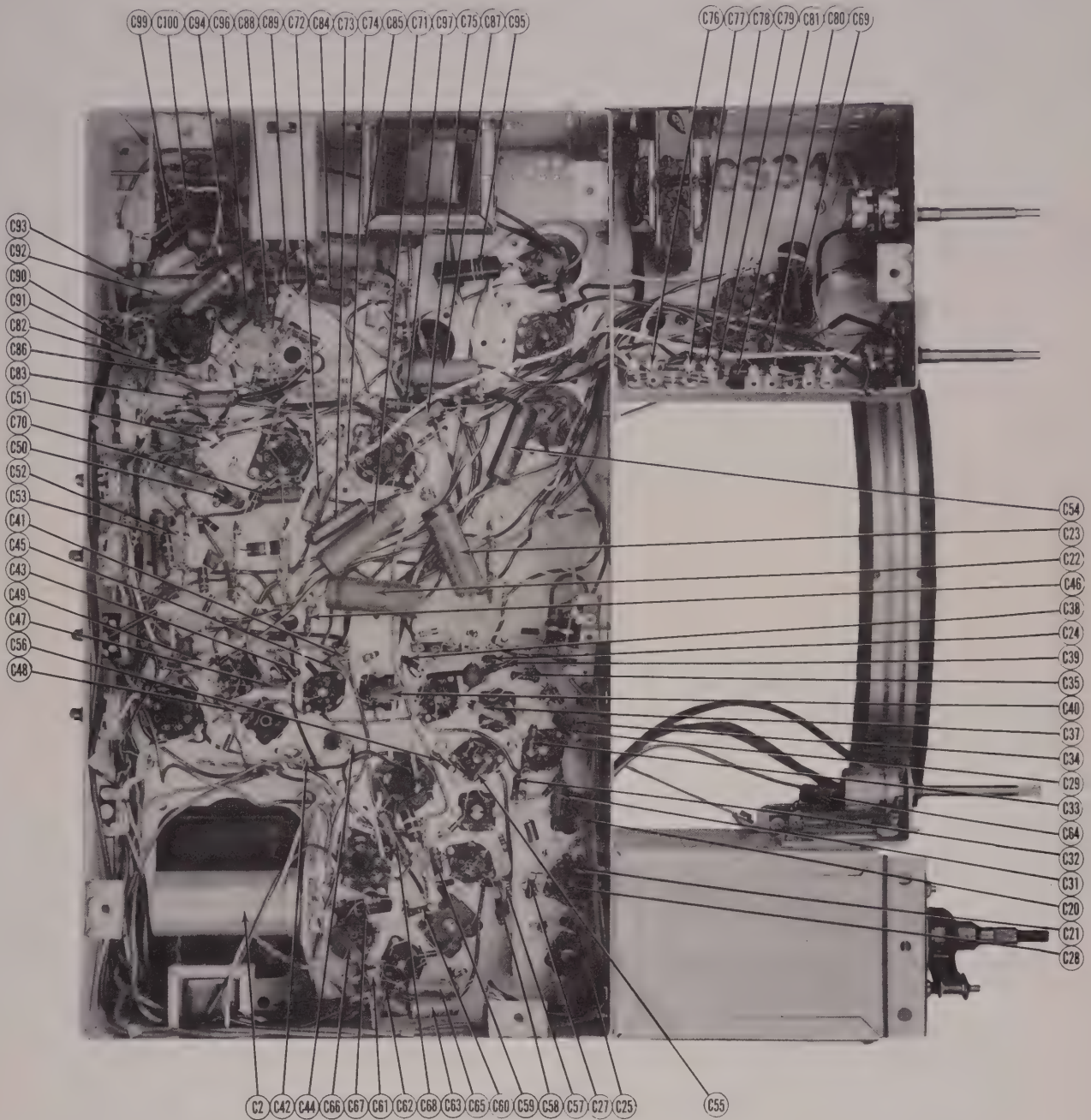
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION

CHASSIS BOTTOM VIEW–RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF Amp.	6BA6	6BA6	7BK	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6BA6	6BA6	7BK	
V7	4th Video IF Amp.	6AG5	6AG5	7BD	
V8	Video Det. - Sync Limiter	6AL5	6AL5	6BT	
V9	Video Amplifier	12AU7	12AU7	9A	
V10	1st Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V12	Discriminator	6AL5	6AL5	6BT	
V13	AF Amplifier	6AV6	6AV6	7BT	
V14	Audio Output	6K6GT	6K6GT	7S	
V15	AGC Amp. - Vert. Osc. - Vert. Disch.	6SN7GT	6SN7GT	8BD	
V16	AGC Rect. - 1st Sync Separator	6SN7GT	6SN7GT	8BD	
V17	Sync Amp. - 2nd Sync Separator	6SN7GT	6SN7GT	8BD	
V18	Vert. Output	6K6GT	6K6GT	7S	
V19	Horiz. AFC - Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V20	Horiz. Output	6BG6G	6BG6G	5BT	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23A	LV Rectifier	5U4G	5U4G	5T	
B	LV Rectifier	5U4G	5U4G	5T	Used in Model 9T256 only.
V24A	Picture Tube	12LP4	12LP4	12D	
B	Picture Tube	10BP4	10BP4	12D	Used in Chassis KCS38 and KCS38C only.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	73582	AFH82J16E			TVL-25	▪ Filter
B	10	450						■ Output Decoupling
C	80	200						▲ Filter
C2A	40	450	73583	AFH8J1810D			TVL-27	▪ Filter
B	90	150						■ Vert. Output Cath. Bypass
C	50	150						▲ Filter
C3A	60	450	73581	AFH1222J4D			TVL-68	▪ Filter
B	10	450						■ Vert. Osc. Decoupling
C	10	450						▲ Decoupling
D	20	150						Output Cathode Bypass
C4A	40	450	71432	AFH882J			TVL-30	▪ Filter
B	40	450						■ Filter
C	10	450						▲ Vert. Output Decoupling
C5	18		54207	CN18KNPO	D2-18	NPOK-18		Fixed Trimmer
C6	270		73091	GP270M	D6-271	GP2K-270		RF Coupling
C7	1500		71501	GP1500M	D6-152	GP2L-0015		AGC Filter
C8	1500		71501	GP1500M	D6-152	GP2L-0015		RF Screen Bypass
C9	1500		71501	GP1500M	D6-152	GP2L-0015		RF Bypass
C10	1500		71501	GP1500M	D6-152	GP2L-0015		RF Coupling
C11	5000		73473	BPD-5	D6-502	811-005	29C1	RF Coupling
C12	1500		71501	GP1500M	D6-152	GP2L-0015		RF Filament Bypass
C13	1500		71501	GP1500M	D6-152	GP2L-0015		Converter Filament Bypass
C14	1500		71501	GP1500M	D6-152	GP2L-0015		Converter Decoupling
C15	1500		71501	GP1500M	D6-152	GP2L-0015		RF Bypass
C16	10		53511	CN10DNPO	D2-10	NPOK-10		Fixed Trimmer
C17	5		74035	CN5CN470		N470K-5		Oscillator Feedback
C18	5		74035	CN5CN470		N470K-5		Oscillator Feedback
C19	1500		71501	GP1500M	D6-152	GP2L-0015		Oscillator Filament Bypass
C20	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C21	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C22	.47	200	73787	P288-47			TC-5	AGC Filter
C23	.47	200	73787	P288-47			TC-5	AGC Filter
C24	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C25	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	AGC Filter
C26	82			SI82JNPO	D2-82	NPOM-82		Fixed Trimmer
C27	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	1st Video IF Filament Bypass
C28	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	1st Video IF Decoupling
C29	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C30	47			CN47JNPO	D2-47	NPOM-50		Fixed Trimmer
C31	270	1000	73091	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C32	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	2nd Video IF Filament Bypass
C33	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	2nd Video IF Decoupling
C34	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C35	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	1st Sound IF Grid Filter
C36	47			CN47JNPO	D2-47	NPOM-47		Fixed Trimmer
C37	33	1000	74105	1468-00004	D6-330	GP1K-33	1FM-44	IF Coupling
C38	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	3rd Video IF Decoupling
C39	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C40	270	1000	73091	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C41	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	4th Video IF Screen Bypass
C42	82		64062	GP100M	D2-82	GP1K-100	1FM-31	4th Video IF Cathode Bypass
C43	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	4th Video IF Plate Decoupling
C44	75			CN75JNPO	D2-75	NPOM-75		Fixed Trimmer
C45	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C46	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C47	270	1000	73091	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C48	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	RF Bypass
C49	10	500	72615	1468-00001	D6-100	GP1K-10	MS-41	Video Diode Filter
C50	47			SI47JNPO	D2-47	NPOM-50	MS-45	Fixed Trimmer
C51	270		73922	GP270M	D6-271	GP2K-270	1FM-325	Video Coupling
C52	120		73921	GP120M	D6-121	GP2K-120	1FM-315	Video Coupling
C53	.047	400	73553	P488-047			TM-15	Video Coupling
C54	.1	600	73557	P688-1			TM-1	Picture Tube Cathode Bypass
C55	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	1st Sound IF Cathode Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	1st Sound IF Decoupling
C57	100		39396	GP100M	D6-101	GP1K-100	1FM-31	Limiter Grid Filter
C58	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Filament Bypass
C59	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Screen Bypass
C60	1500		71501	GP1500M	D6-152	GP2L-0015	1FM-215	Limiter Plate Decoupling
C61	270		73922	GP270M	D6-271	GP2K-270	1FM-325	RF Bypass
C62	270		73922	GP270M	D6-271	GP2K-270	1FM-325	Discriminator Filament Bypass
C63	.0022	600	73595	P688-0022	D6-222	GP2M-0022	TM-22	Audio Coupling
C64	.0047	600	73930	P688-0047	D6-472	GP2M-0047	TM-35	Tone Compensation
C65	.01	400	73581	P488-01	D6-103	821-01	TM-11	Audio Coupling
C66	.0015	600	73802	P688-0015	D6-152	GP2L-0015	1FM-215	De-emphasis
C67	.01	600	73585	P688-01	D6-103	821-01	TM-11	Audio Coupling
C68	.0033	600	73785	P688-0033	D6-332	GP2M-0033	TM-23	Output Plate Bypass
C69	.47	200	73787	P388-47			TC-5	AGC Filter
C70	.01	400	73581	P488-01	D6-103	821-01	TM-11	AGC Rect. Cathode Bypass
C71	.22	200	73794	P488-22			TC-2	1st Sync Separator Cath. Bypass
C72	.001	600	73801	P688-001	D6-102	GP2L-001	TM-21	Sync Coupling
C73	.047	600	73553	P688-047			TM-15	Sync Coupling
C74	100	500	39838	1468-0001	D6-101	GP1K-100	1FM-31	Sync Coupling
C75	390	500	68542	1468-0004	D6-391	GP2K-390	1FM-34	Sync Separator Cath. Bypass
C76	.0022	600	73595	P688-0022	D6-222	GP2M-0022	TM-22	Integrator Network
C77	.0047	600	73920	P688-0047	D6-472	GP2M-0047	TM-25	Integrator Network
C78	.0047	600	73920	P688-0047	D6-472	GP2M-0047	TM-25	Integrator Network
C79	.0047	600	73920	P688-0047	D6-472	GP2M-0047	TM-25	Vert. Osc. Grid Capacitor
C80	.047	600	73592	P688-047			TM-15	Vertical Discharge
C81	.1	400		P488-1			TM-1	Vert. Sweep Coupling
C82	.39	1000	74726	1469-00004	D6-390	GP1K-39	MS-44	Horiz. Sync Coupling
C83	.0022	600	73803	P688-0022	D6-222	GP2M-0022	TM-22	HOriz. Sync Coupling
C84	.022	400	73562	P488-022			TM-12	AFC Filter
C85	.22	400	73794	P488-22			TC-2	AFC Filter
C86	390	500	68542	1468-0004	D6-391	GP2K-390	1FM-34	AFC Filter
C87	.047	600	73592	P688-047			TM-15	Horiz. AFC Plate Bypass
C88	180	1000	73102					Horiz. Osc. Grid Capacitor
C89	.01	600	73594	P688-01			TM-11	Fixed Trimmer
C90	.0022	600	73595	P688-0022	D6-222	GP2M-0022	TM-22	Horiz. Discharge
C91	560	500	74250		D6-561	GP2K-560		Horiz. Sweep Coupling
C92	.047	1000	73597	P1088-047			TR-15	Horiz. Output Screen Bypass
C93	.22	400	73794	P488-22			TC-2	Horiz. Output Cathode Bypass
C94	.039	1000	74728					Damper Filter *
C95	.018	1000	74727					Damper Filter
C96	.047	400	73553	P488-047			TM-15	Fixed Trimmer †‡
C97	.01	400	73561	P488-01	D6-103 TV1-502	821-01	TM-11	Decoupling †
C98	500	15000	74156					HV Filter
C99	.01	600	74727	P688-01	D6-103	811-01	TM-11	Line Filter
C100	.01	600	74727	P688-01	D6-103	811-01	TM-11	Line Filter
C101	330	500	53113					Fixed Trimmer ‡

* Chassis KCS38C uses .068MFD in this application.
† Not used in Chassis KCS38,
‡ Used only in Chassis KCS38C.
‖ Chassis KCS38C uses .01Mfd. in this application.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	38408	Q13-137X	AT-109	BT-72-S	Volume Control - Tapped @ 200KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SW-A	#	Attach to R1A per instructions.
R2A	50KΩ	½		B11-123 *			Brightness Control - Panel
B	10KΩ	½	74047	B17-116 *		970913-11	Contrast Control - Rear
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit"
R3A	1 Meg.	½		B11-137 *			Vert. Hold - Panel
B	50KΩ	½	72734	B11-123 *		970111-24	Horiz. Hold - Rear
C	Shaft End			E-187 *			Attach per instructions in "Concentrikit"
R4	2.5 Meg.	½	71440	Q11-239		M-84-S	Height Control
R5	3300Ω	2	74597			970913-15	Focus Control - Wire Wound
R6	5000Ω	½	71441	Q11-114		M-19-S	Vert. Linearity Control
R7	200KΩ	½	74475			M-52-S	AGC Threshold Control

* Additional parts to be used with "Concentrikit".
# Switch attached at factory.

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS 10% UNLESS OTHERWISE STATED.
R8	330Ω	½			Antenna Shunt - See note 1.
R9	10000Ω 20%	½		BTS-1000	RF Grid - See note 2
R10	1500Ω 20%	½			AGC Network
R11	1500Ω 20%	½			RF Screen
R12	2700Ω	½		BTS-2700	RF Plate
R13	100KΩ 20%	½			Series Test Point
R14	100KΩ 20%	½			Mixer Grid
R15	150Ω 20%	½			Mixer Plate Decoupling
R16	100KΩ 20%	½			Oscillator Grid
R17	100KΩ 20%	½			Oscillator Grid
R18	47Ω 20%	½			Oscillator Cat hode
R19	10KΩ 20%	½			Oscillator Plate
R20	10000Ω 20%	½		BTS-1000	Decoupling
R21	150Ω 20%	½			Decoupling - See note 1.
R22	10000Ω 20%	½		BTS-1000	AGC Network
R23	39KΩ	½		BTS-39K	AGC Network
R24	150Ω 5%	½			1st Video IF Cathode
R25	10000Ω 20%	½		BTS-1000	1st Video IF Decoupling
R26	150Ω 20%	½			Decoupling Network
R27	10KΩ 5%	½			2nd Video IF Grid
R28	68Ω	½			2nd Video IF Cathode
R29	10000Ω 20%	½		BTS-1000Ω	2nd Video IF Decoupling
R30	150Ω 20%	½			Decoupling Network
R31	47Ω 5%	½			3rd Video IF Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R32	3900Ω 5%	½			3rd Video IF Plate
R33	10000Ω 20%	½		BTS-1000	3rd Video IF Decoupling
R34	150Ω 20%	½			Decoupling Network
R35	10000Ω 20%	½		BTS-1000	4th Video IF Screen
R36	150Ω	1			4th Video IF Cathode
R37	8200Ω 5%	1			4th Video IF Plate
R38	10000Ω 20%	½		BTS-1000	4th Video IF Plate Decoupling
R39	100Ω 20%	½			Bias Network
R40	56000Ω 5%	½		BTS-5600-5%	Video Det. Diode Load
R41	680KΩ	½		BTS-680K	Video Amp. Grid - See note 3.
R42	39Ω	½			Video Amp. Cathode
R43	12KΩ	½		BTS-12K	Trap Coil Shunt - See note 1.
R44	2200Ω	½		BTS-2200	Video Amp. Plate
R45	4700Ω 5%	½		BTS-4700-5%	Video Amp. Plate
R46	68Ω 20%	½			Voltage Divider
R47	220KΩ	½		BTS-220K	Voltage Divider
R48	12KΩ	2		BT-2-12K	Video Amp. Cathode
R49	5600Ω	1		BTA-5600	Video Amp. Plate
R50	6800Ω 5%	1		BTA-6800-5%	Video Amp. Plate
R51	2.2 Meg.	½		BTS-2.2 Meg.	Voltage Divider
R52	2.2 Meg.	½		BTS-2.2 Meg.	Picture Tube Grid
R53	470KΩ	½			1st Sound IF Grid
R54	82Ω	½			1st Sound IF Cathode
R55	1200Ω	½		BTS-1200	1st Sound IF Decoupling
R56	22KΩ	½		BTS-22K	Limiter Grid
R57	1000Ω 20%	½		BTS-1000	Limiter Plate Decoupling
R58	22KΩ 20%	½			Limiter Screen
R59	47KΩ 20%	½		BTS-47K	Voltage Divider
R60	100KΩ 5%	½		BTS-100K-5%	Discriminator Diode Load
R61	100KΩ 5%	½		BTS-100K-5%	Discriminator Diode Load
R62	5.1Ω	1	72067		Discriminator Filament - Wire Wound
R63	22KΩ 20%	½		BTS-22K	De-emphasis
R64	47KΩ	½		BTS-47K	Tone Compensation
R65	10 Meg. 20%	½		BTS-10 Meg.	AF Amp. Grid
R66	330KΩ	½		BTS-330K	AF Amp. Plate
R67	470KΩ 20%	½		BTS-470K	Output Grid
R68	330Ω	2		BW-½-330	Output Cathode
R69	330Ω	2		BW-½-330	Output Cathode
R70	1800Ω	2		BT-2-1800	Output Decoupling
R71	12KΩ 5%	½		BTS-12K-5%	Voltage Divider
R72	12KΩ	½		BTS-12K	Voltage Divider
R73	680KΩ	½		BTS-680K	AGC Network
R74	6800Ω 5%	½		BTS-6800-5%	AGC Network
R75	6.8Meg.	½		BTS-6.8Meg	Voltage Divider
R76	470KΩ	½		BTS-470K	Voltage Divider
R77	470KΩ	½		BTS-470K	Voltage Divider
R78	100KΩ	½		BTS-100K	AGC Rect. Cathode
R79	2700Ω	½		BTS-2700	AGC Rect. Cathode
R80	5600Ω	½		BTS-5600	Voltage Divider
R81	330KΩ	½		BTS-330K	Voltage Divider
R82	4700Ω	½		BTS-4700	AGC Rect. Plate
R83	5600Ω	½		BTS-5600	Isolation
R84	150KΩ 20%	½		BTS-150K	1st Sync Separator Grid
R85	1.2 Meg. 5%	½		BTS-1.2Meg-5%	Bias Network
R86	27KΩ	½		BTS-27K	1st Sync Separator Plate
R87	47KΩ	½		BTS-47K	Phase Shifting
R88	10 Meg.	½		BTS-10Meg.	Voltage Divider
R89	1Meg.	½		BTS-1Meg.	Sync Amp. Grid
R90	15KΩ	½		BTA-15K	Sync Amp. Plate
R91	3.9 Meg.	½		BTS-3.9Meg.	2nd Sync Separator Grid
R92	6800Ω	½		BTS-6800	2nd Sync Separator Cathode
R93	22KΩ	½		BTS-22K	Integrator Network
R94	8200Ω	½		BTS-8200	Integrator Network
R95	8200Ω	½		BTS-8200	Integrator Network
R96	1.5Meg. 5%	½		BTS-1.5Meg.5%	Vert. Oscillator Grid
R97	220KΩ	½		BTS-220K	Vert. Oscillator Plate
R98	2.2Meg.	½		BTS-2.2Meg.	Voltage Divider
R99	100KΩ	½		BTS-100KΩ	Voltage Divider
R100	22KΩ	½		BTS-22K	Vert. Oscillator Decoupling - See note 4.
R101	8200Ω-5%	½		BTS-8200-5%	Vert. Peaking
R102	2.2Meg.	½		BTS-2.2Meg.	Vert. Output Grid
R103	2700Ω	½		BTS-2700	Vert.Output Cathode - See note 12.
R104	1000Ω 20%	½		BTS-1000	Vert. Output Decoupling
R105	820KΩ 5%	½		BTS-820K-5%	Horiz. AFC Grid
R106	150KΩ	½		BTS-150K	Horiz. AFC Cathode
R107	180KΩ 5%	1		BTA-180K-5%	Horiz. AFC Cathode
R108	8200Ω	½		BTS-8200	Horiz. AFC Filter Network
R109	2.7Meg. 5%	1		BTA-2.7Meg.5%	Voltage Divider
R110	68KΩ	½		BTS-68K	Voltage Divider
R111	120KΩ	1		BTA-120K	Voltage Divider
R112	120K 5%	1		BTA-120K-5%	Horiz. Oscillator Grid
R113	8200Ω 5%	½		BTS-8200-5%	Horiz. Oscillator Trans. Shunt
R114	22KΩ	½		BTS-22K	Horiz. Oscillator Trans.Shunt
R115	100KΩ	1		BTA-100K	Horiz. Oscillator Plate - See note 6.
R116	470KΩ	½		BTS-470K	Horiz. Oscillator Network
R117	47Ω 20%	½			Parasaitic Suppressor
R118	1 Meg.	½		BTS-1 Meg.	Horiz. Output Grid - See note 10.
R119	100Ω	2		BW-2-100	Horiz. Output Cathode - See note 9.
R120	6800Ω	2		BT-2-6800	Horiz. Output Screen - See note 7.
R121	270KΩ	½		BTS-270K	Accelerating Anode Load - See note 5.
R122	15KΩ	½		BTS-15K	Decoupling - See note 5.
R123	2200Ω	1		BTA-2200	Horiz. Linearity Coil Shunt
R124	2.7Ω	1	74598		HV Rect. Filament - Wire Wound - See note 11.
R125	1 Meg. 20%	½			HV Filter
R126	10Ω	½	18471	BW-½-10	Focus Coil Shunt - Wire Wound
R127A	850Ω	12			Filter - Wire Wound
B	650Ω	6	73588		Bias Network - Wire Wound
C	650Ω	6			Bias Network - Wire Wound
R128	1800Ω	2		BT-2-1800	Voltage Divider
R129	6800Ω	2		BT-2-6800	Bleeder
R130	6800Ω	2		BT-2-6800	Bleeder

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R131	18Ω	½		BW-½-18	Bias Network
R132	100KΩ 20%	1		BTA-100K	Line Filter
R133	10KΩ	½		BTS-10K	Width Control Shunt - See note 8.

Note 1: Not used in all models.
Note 2: Some models use 10KΩ resistor in this application.
Note 3: Some models use 560KΩ resistor in this application.
Note 4: Chassis KCS38 uses 56KΩ resistor in this application.
Note 5: Not used in Chassis KCS38.
Note 6: Not used in Chassis KCS38C.
Note 7: Chassis KCS38C uses 8200Ω - 2 Watt resistor in this application.
Note 8: Used in Chassis KCS38C only.
Note 9: Chassis KCS38 uses 270Ω - 2 Watt resistor in this application.
Note 10: Chassis KCS38C uses 470KΩ resistor in this application.
Note 11: Chassis KCS38C uses 4.7Ω resistor in this application.
Note 12: Chassis KCS38C uses 2200Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC @ 1.9A	700VCT @ .22ADC	5VAC @ 3A.	6.3VAC @ 1.2A. SEC. 4 6.3VAC @ 9A.	74586 *	P-8159 & P-8134 ♦	P-3083	TP-370
B					74874 #			

♦ Use P-8134 for secondary #3.
* Used in Chassis KCS34, B, C and KCS38.
# Used in Chassis KCS38C only.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	164Ω	1.4KΩ	73569	A-8121	A-3000	TBO-2	Vert. Block. Osc. Trans.
T3A	465Ω Tapped @ .5Ω, 7.8Ω, 11.6Ω, 23.8Ω, & 114Ω		74588 *				Horiz. Output Trans.
T B			74876 #				Horiz. Output Trans.
T4A	580Ω Tapped @ 10Ω		74587 *	A-8116	A-3037	TSO-4	Vert. Output Trans.
B			74875 #				Vert. Output Trans.
T5A	14Ω		71420				Horiz. Deflection Coil
B	60Ω						Vert. Deflection Coil
T6	64Ω		74585				Focus Coil

* Used in Chassis KCS34, B, C and KCS38.
# Used in Chassis KCS38C only.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.8KΩ	3.7Ω	500Ω	.26Ω	71419	A-3877	A-2930	RO-9 ■	■ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA RCA PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM	3.8Ω	73635 ▲	12J12	12A4A	▲ Used in Chassis KCS34, KCS34B.
B	59Ω	3.7Ω	74599 ¶		57E598	¶ Used in Chassis KCS38, KCS38C.
C	PM	4.2Ω	73993 ▲	5T19	57A15	▲ Used in Chassis KCS34C
	CONE DIA.	V. C. DIA.				
SP2A	11 7/8"	1"				
B	7" x 4 7/8"	9/16"				
C	7" x 4 3/4"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (@ CURRENT 1000 ∿)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.220A	43Ω	1.3 Henries	73154 †	C-2326 *	C-2991	TR-3300*	* Drill one new mounting hole. † Used in Ch. KCS34, 34B, 34C only.

RCA VICTOR MODELS T100, T121, TC124, TC125, TC127, 9T246, 9T256, 9TC245, 9TC247, 9TC249

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

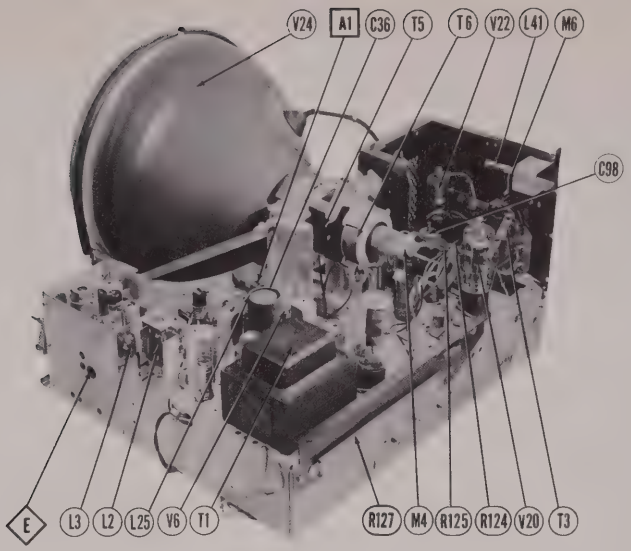
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2	Ant. Trans.	.5Ω	.2Ω	73578		Complete with connector.
L3	IF Trap	.5Ω		73476		
L4	IF Trap Shunt	.5Ω		73475		
L5	IF Trap	.5Ω		73476		
L6	RF Grid Coil	0Ω		73633		Complete with Stator, Rotor, Coils and Segments.
L7	RF Plate Trimmer	0Ω		74110		
L8	RF Plate Coil	0Ω		73471		Complete with Stator, Rotor, Coils and Segments.
L9	RF Plate Coil	0Ω		73460		Channel 6 - Also part of 73471 (L8)
L10	RF Coupling	0Ω		73462		
L11	Mixer Grid Trimmer	0Ω		74109		
L12	Mixer Grid Coil	0Ω		73470		Complete with Stator, Rotor, Coils, and Segments.
L13	Osc. Plate Trimmer	0Ω		74109		
L14	Osc. Plate Coil	0Ω		73874		Channel 6
L15	Osc. Plate Coils	0Ω		73468		Front Section - Complete with Stator, Rotor, Coils, and Segments.
L16	Osc. Plate Coil	0Ω		73469		Rear Section - Complete with Stator , Rotor, Coils, and Segments.
L17	Osc. Plate Trimmer	0Ω		74108		Fine Tuning
L18	Fil.Choke	0Ω		73477		
L19	Fil. Choke	0Ω		73477		
L20	Fil. Choke	0Ω		73477		
L21	Conv. Trans.	.5Ω	0Ω	73448		
L22	1st Video IF	.2Ω	.8Ω	74589		
L23	Fil. Choke	0Ω		73477		
L24	2nd Video IF	.2Ω		74590		
L25	3rd Video IF	.2Ω	.1Ω	74591		
L26	Peaking	2.5Ω		74170		36 Microhenries - Wound on 8200Ω resistor.
L27	4th Video IF	.2Ω	.2Ω	74592		
L28	21.25MC Sound Trap	0Ω		71778		
L29	5th Video IF	.1Ω	0Ω	73575		
L30	Peaking	6.8Ω		74214		180 Microhenries - Red & White Identification Dot.
L31	Peaking	5Ω		71527		93 Microhenries - Red Identification Dot.
L32	4.5MC Sound Trap	2.5Ω		73577		
L33	Peaking	6.8Ω		74214		180 Microhenries - Red & White Identification Dot.
L34	Peaking	7.2Ω		71526		250 Microhenries - Green Idenification Dot.
L35	Peaking	7.2Ω		71526		250 Microhenries - Green Identification Dot.
L36	Peaking	7.2Ω		71526		250 Microhenries - Green Identification Dot.
L37	Sound IF Trans	0Ω	0Ω	71424		
L38	Disc. Trans.	0Ω	0Ω	71427		
L39	Horiz. Osc. Trans.	120Ω	38Ω	73576		
L40	Horiz. Linearity	34Ω		71449		
L41	Width Coil	.2Ω		71429		
L42	Expanded Width Coil	.2Ω		71429		Chassis KCS38C
L43	Series Width Coil			74878		Chassis KCS38C
L44	Vert. Peaking			74877		Chassis KCS38C

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6 - 8	.200	White	11765		Type #51 - Not used in models T120, T121

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M2	RF Tuner		
M3	Fuse	73600	Type GJV - .25A - 250V
M4	Ion Trap	74823	
M5	Switch	74760	TV-Phono
M6A	Switch	74147	Width Switch - Chassis KCS34, KCS34B, KCS34C
B	Switch	74872	Width Switch - Chassis KCS38C
M7	Switch	74157	Cabinet Interlock
M8	Trimmer	74593	Horiz. Locking
M9	Trimmer		Horiz. Drive
M10	Relay	74873	Picture Expander - Chassis KCS38C
M11	Switch	74881	Remote Picture Control - Chassis KCS38C
	Knob	74000	Horiz. Hold - Chassis KCS34, B, C, KCS38, C (Dark)
	Knob	74000	Contrast - Chassis KCS34, B, C, KCS38, C (Dark)
	Knob	74635	Channel Selector - Chassis KCS38, C
	Knob	74885	Channel Selector - Chassis KCS34C
	Knob	73997	Channel Selector - Chassis KCS34, B (Tan)
	Knob	73996	Channel Selector - Chassis KCS34, B (Dark)
	Knob	74636	Fine Tuning - Chassis KCS38, C
	Knob	73994	Fine Tuning - Chassis KCS34, B, C (Dark)
	Knob	73995	Fine Tuning - Chassis KCS34, B (Tan)
	Knob	73998	Vert. Hold - Chassis KCS34C, KCS38, C
	Knob	73998	Brightness - Chassis KCS 34, B, C, KCS38, C (Dark)
	Knob	74002	Volume - Chassis KCS34, B, C, KCS38, C
	Knob	74003	Volume - Chassis KCS34, B (Tan)
	Knob	73999	Brightness - Chassis KCS34, B (Tan)
	Knob	73999	Vert. Hold - Chassis KCS34, B (Tan)
	Knob	74001	Contrast - Chassis KCS34, B (Tan)
	Knob		Horiz. Hold



CHASSIS-TOP VIEW
DISASSEMBLY INSTRUCTIONS

MODEL 9T246

1. Remove seven push-on type control knobs.
2. Remove four 1/4 hex head bolts holding rear cover. Remove cover.
3. Disconnect antenna lead at plug in chassis.
4. Disconnect speaker plug.
5. Remove six 3/8" hex head bolts holding chassis. Remove chassis.
6. Remove four 11/32" hex head nuts holding speaker. Remove speaker.

MODEL 9TC245

1. Remove seven push-on type control knobs.
2. Remove eight screws holding rear cover. Remove cover.
3. Remove three screws holding power switch to cabinet.
4. Disconnect antenna lead at plug connection in chassis.
5. Disconnect speaker at plug and remove cabinet lamp assembly. Push these leads up through hole in cabinet.
6. Remove five 3/8" hex head bolts holding chassis. Remove chassis.
7. Remove four 5/16" hex nuts holding speaker. Remove speaker.

CRITICAL LEAD DRESSING

1. The ground bus from pin 2 and the center shield of V11 socket should not be shortened or rerouted.
2. Do not change the dress of the filament leads or the bypass capacitors in the picture or sound IF circuits. The filament leads between V11, V12 and V13 should be down against the chassis and away from grid or plate leads.
3. If it is necessary to replace any of the 1500MMF capacitors in the picture IF circuit, the lead length must be kept as short as possible.
4. Picture IF coupling capacitors C31, C37, C40 and C47 should be up and away from the chassis and should be clear of the pix IF transformer adjustments by at least 1/4 inch. If the dress of any of these capacitors is changed, the IF alignment should be rechecked.
5. Leads to L31 and L30 must be as short as possible.
6. Dress peaking coils L33, L35 and L36 up and away from the chassis.
7. Dress C61 across tube pins 5 and 6 with leads not exceeding 3/8 inch.
8. Dress the blue lead from pin 5 of V13 down against the chassis.
9. Dress C52 and C53 up and away from the chassis.
10. Dress the yellow lead from the picture control away from the chassis and away from the volume-control leads. Dress the yellow lead from pin 8 of V9 away from the chassis.
11. Dress the green lead from pin 2 of V9 away from the chassis.
12. Dress R106, R105, R109, R112 and R107 up and away from the chassis.
13. The leads to the volume control should be dressed down against the chassis and away from V11 and V12.
14. Contact between the RF oscillator frequency adjustment screws and the oscillator coils or channel switch eyelets must be avoided.
15. Dress leads from L41 (width control coil) away from the transformer frame.

PHOTOFACT* Folder

TELE-TONE MODELS TV-284, TV-286, TV-287, TV-288 (Ch. TH, TJ, TT)

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TELE-TONE MODELS TV-284, TV-286, TV-287, TV-288 (Ch. TH, TJ, TT)

TELE-TONE MODELS TV-284, TV-286, TV-287, TV-288 (Ch. TH, TJ, TT)

TELE-TONE MODEL TV-287

TRADE NAME	Tele-Tone, Models TV-284 (Ch. "TT"), TV-286 (Ch. "TH" or "TJ"), TV-287, TV-288, (Ch. "TT")
MANUFACTURER	Tele-Tone Radio Corp., 540 West 58th St., New York, New York
TYPE SET	Television Receiver
TUBES	Twenty-Two (Models TV-284, TV-287, TV-288) Twenty-Three (Models TV-286)
POWER SUPPLY	110-120 Volts AC
RATING	1.67 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

INDEX

Alignment Instructions 6

Block Diagram 20

Disassembly Instructions 19

Fine Tuning Drive Cord Stringing 19

Horiz. Sweep Circuit Adjustment 10

Parts List and Description 13, 14, 15, 16

Photographs
- Cabinet-Rear View 10
- Capacitor Identification 11, 18
- Chassis-Top View 3, 16
- RF Tuner 7
- Resistor Identification 12, 17
- Trans., Inductor and Alignment Identification 4, 9

Schematic 2

Tube Placement Chart 5

Voltage and Resistance Measurements 8

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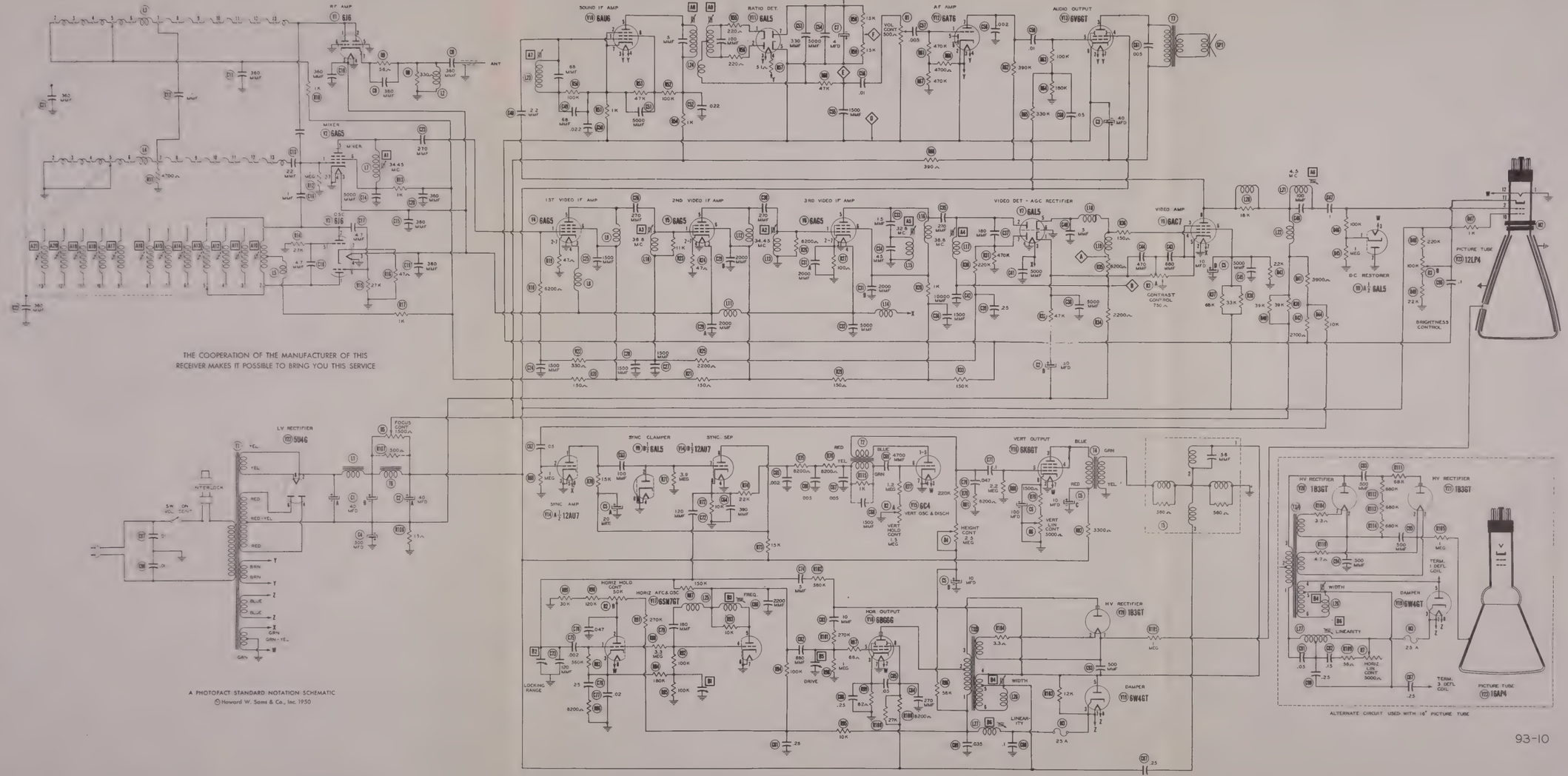

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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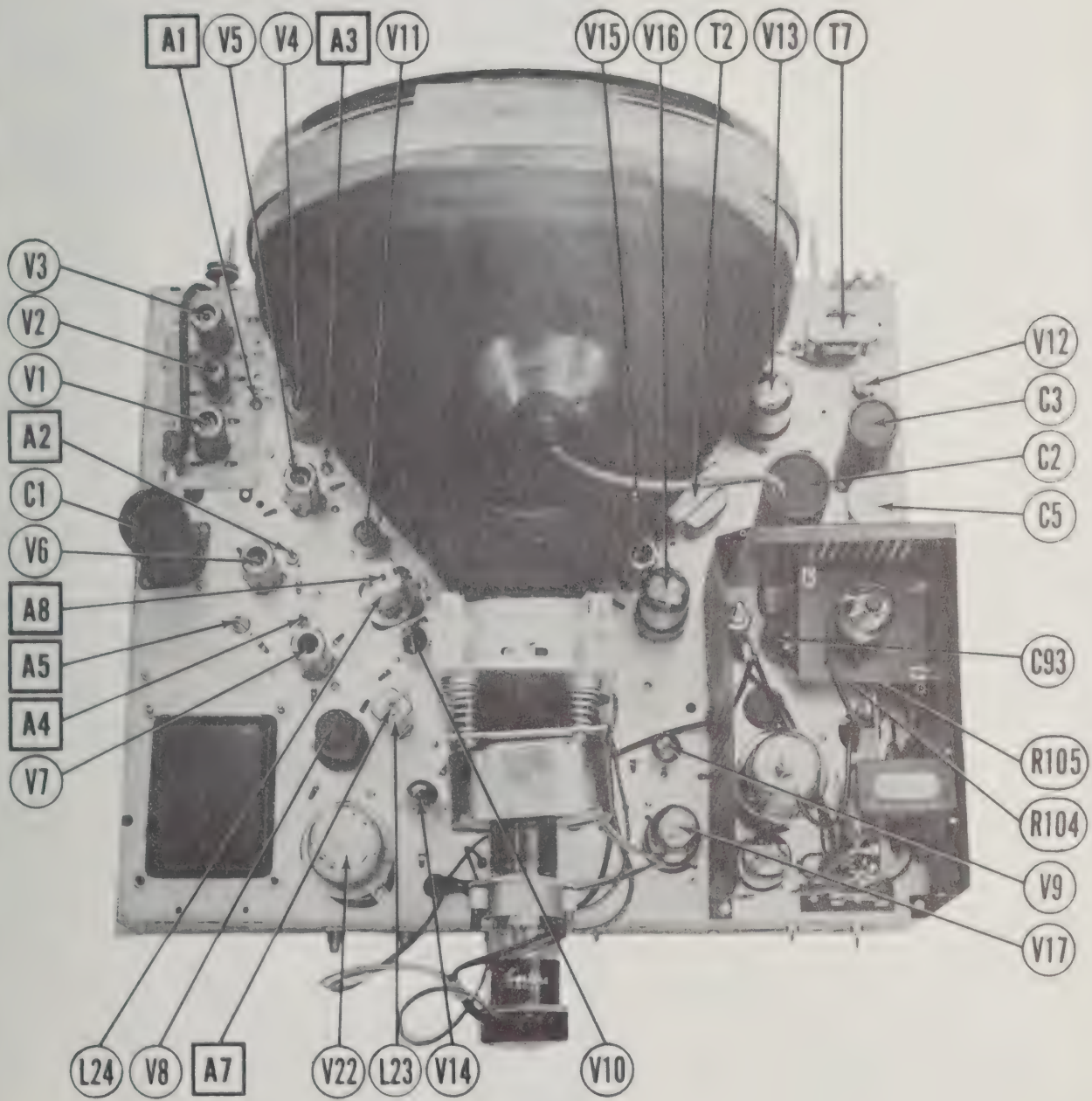


CHASSIS TOP VIEW

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TELE-TONE MODELS TV-284, TV-286, TV-287, TV-288 (Ch. TH, TJ, TT)

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V17) from its socket.

VIDEO IF ALIGNMENT

Turn the contrast control to the mid-position of its range.
During video IF alignment the common lead of the VTVM is connected to -2.5 volts with respect to chassis, avoid grounding the VTVM case.
Remove the local oscillator tube (V3) to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	34.45MC (Unmod.)	Any	DC Probe to Point ◇A◇ Common to Point ◇B◇	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 1.5 volt reading.
2.	Direct	"	36.8MC	"	"	A3, A4	"
3.	Direct	"	32.8MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	35MC (10MC SWP)	32.8MC 34.45MC 36.8MC 37.3MC	Any	Vert. Amp. to Point ◇A◇. Low side to chassis.		Check for response curve similar to Fig 1 with markers as shown. If necessary slightly retouch A1 thru A4 for optimum response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	Not used	4.5MC (400 ∿ AM Mod.)	Any	Vert. Amp. to pin 2 (Grid) of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400 ∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to -140 volts with respect to chassis, avoid grounding or touching the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any channel not used locally	DC Probe to Point ◇C◇ Common to Point ◇D◇	A7, A8	Adjust for maximum deflection.
7.	.01MFD	"	"	"	DC Probe to Point ◇E◇ Common to Point ◇F◇	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (10MC SWP)	4.5MC	Any channel not used locally	Vert. Amp. to Point ◇C◇. Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per Fig 2. Reconnect stabilizer cap. C7.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point ◇D◇. Low side to chassis.	A9	Adjust A9 so 4.5MC occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V3).
Set the fine tuning control to the mid-position of its range.
The RF and mixer portions of this receiver are pre-set at the factory and are very stable, they should not require adjustment in the field.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded antenna lead. Low side to chassis.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to Point ◇A◇. Low side to chassis.	A10	Adjust to place sound marker as shown in Fig 4. The video marker should be at 50%. If the video marker falls below 45%, or above 60%, on ALL channels, turn the channel selector to channel 6 and retouch A1 thru A4 for proper response.
			63MC (10MC SWP)	61.25MC 65.75MC	3		A11	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A12	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A13	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A14	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A15	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A16	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A17	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A18	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A19	
			207MC (10MC SWP)	205.25MC 209.75MC	12		A20	
			213MC (10MC SWP)	211.25MC 215.75MC	13		A21	

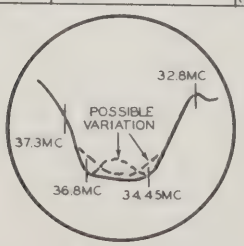


FIG. 1

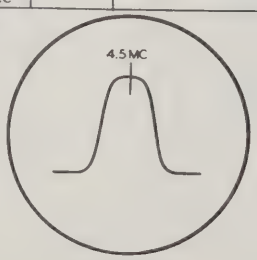


FIG. 2

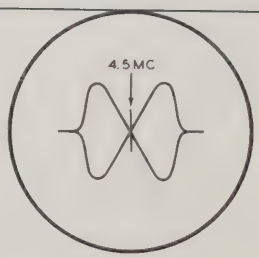
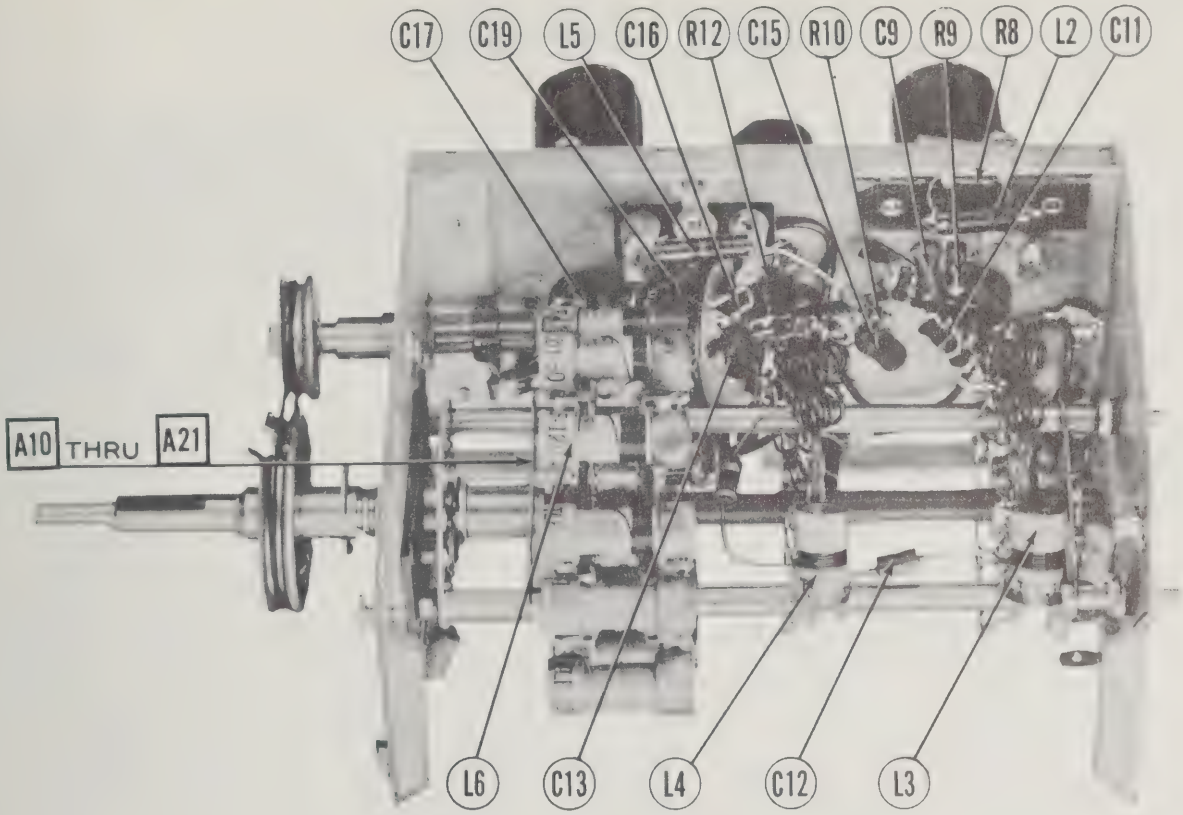
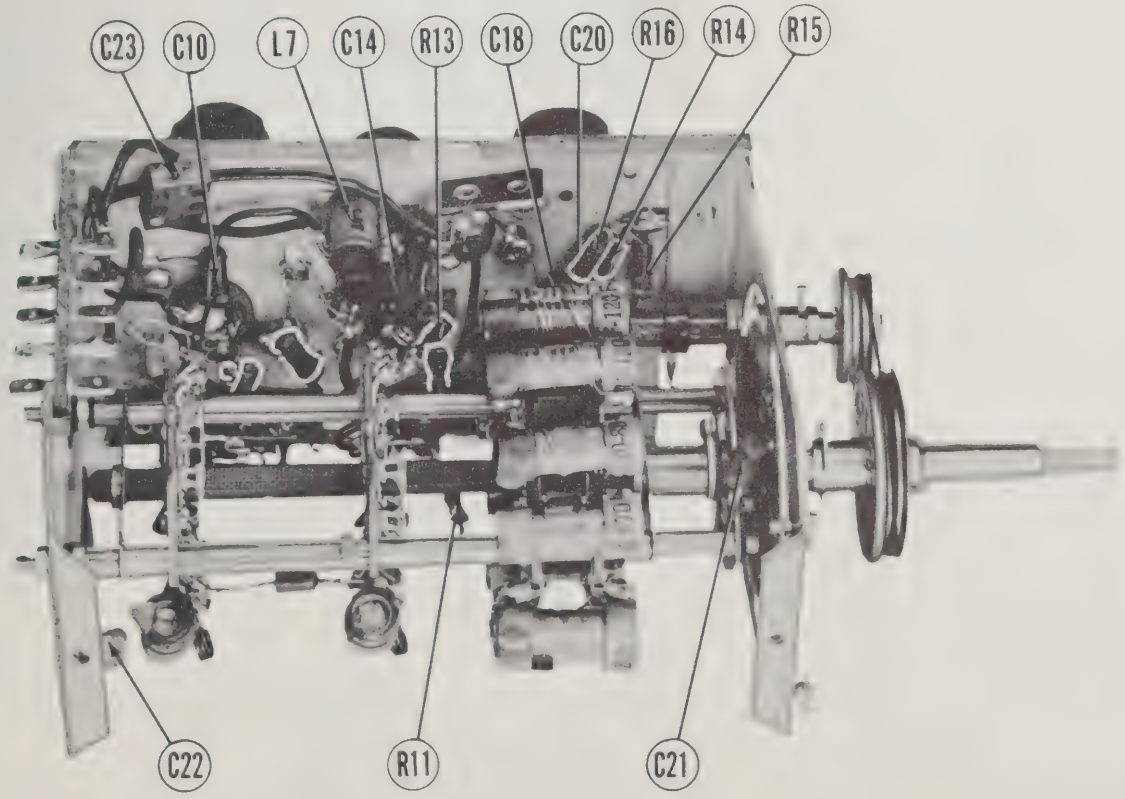


FIG. 3



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	100VDC	100VDC	6.3VAC	0V.	0V.	0V.	1VDC		
V 2	6AG5	-1.1VDC	0V.	6.3VAC	0V.	115VDC	115VDC	0V.		
V 3	6J6	95VDC	95VDC	6.3VAC	0V.	§-1.4VDC	§-2.1VDC	.2VDC		
V 4	6AG5	-.2VDC	.2VDC	6.3VAC	0V.	120VDC	120VDC	.2VDC		
V 5	6AG5	-.3VDC	.5VDC	6.3VAC	0V.	125VDC	125VDC	.5VDC		
V 6	6AG5	0V.	.9VDC	0V.	6.3VAC	122VDC	122VDC	.9VDC		
V 7	6AL5	.1VDC	-2.8VDC	6.3VAC	0V.	-2.1VDC	0V.	-.2VDC		
V 8	6AC7	0V.	0V.	1.3VDC	-2.5VDC	1.3VDC	180VDC	6.3VAC	195VDC	
V 9	6AL5	.3VDC	-1VDC	6.3VAC	0V.	0V.	0V.	0V.		
V 10	6AU6	†1.9VDC	†2.6VDC	†6.3VAC	†0V.	†245VDC	†55VDC	†2.6VDC		
V 11	6AL5	†-.1VDC	†0V.	†6.3VAC	†1.4VAC	†0V.	0V.	†-.1VDC		
V 12	6AT6	†-.6VDC	†0V.	†0V.	†6.3VAC	0V.	0V.	†100VDC		
V 13	6V6GT	0V.	†0V.	†220VDC	†240VDC	†-10VDC	†-9.3VDC	†6.3VAC	†0V.	
V 14	12AU7	95VDC	-.3VDC	0V.	0V.	0V.	232VDC	-1VDC	11VDC	6.3VAC
V 15	6C4	92VDC 330VDC	0V.	6.3VAC	0V.	92VDC 330VDC	-50VDC	0V.		
V 16	6K6GT	0V.	0V.	320VDC	320VDC	0V.	.1VDC 28VDC	6.3VAC	26VDC 42VDC	
V 17	6SN7GT	-15VDC	110VDC	.9VDC	-57VDC	170VDC	0V.	0V.	6.3VAC	
V 18	6BG6G	0V.	6.3VAC	6.7VDC	0V.	-6.6VDC	0V.	0V.	270VDC	TOP CAP *
V 19	6W4GT	0V.	0V.	460VDC	0V.	370VDC	0V.	460VDC	460VDC	
V 20	1B3GT	* DO NOT MEASURE.								
V 21	1B3GT	* DO NOT MEASURE.								
V 22	5U4G	0V.	400VDC	0V.	380VAC	0V.	380VAC	0V.	400VDC	
V 23	12LP4	0V.	.2VDC	PIN 10 370VDC	PIN 11 125VDC	PIN 12 6.3VAC				

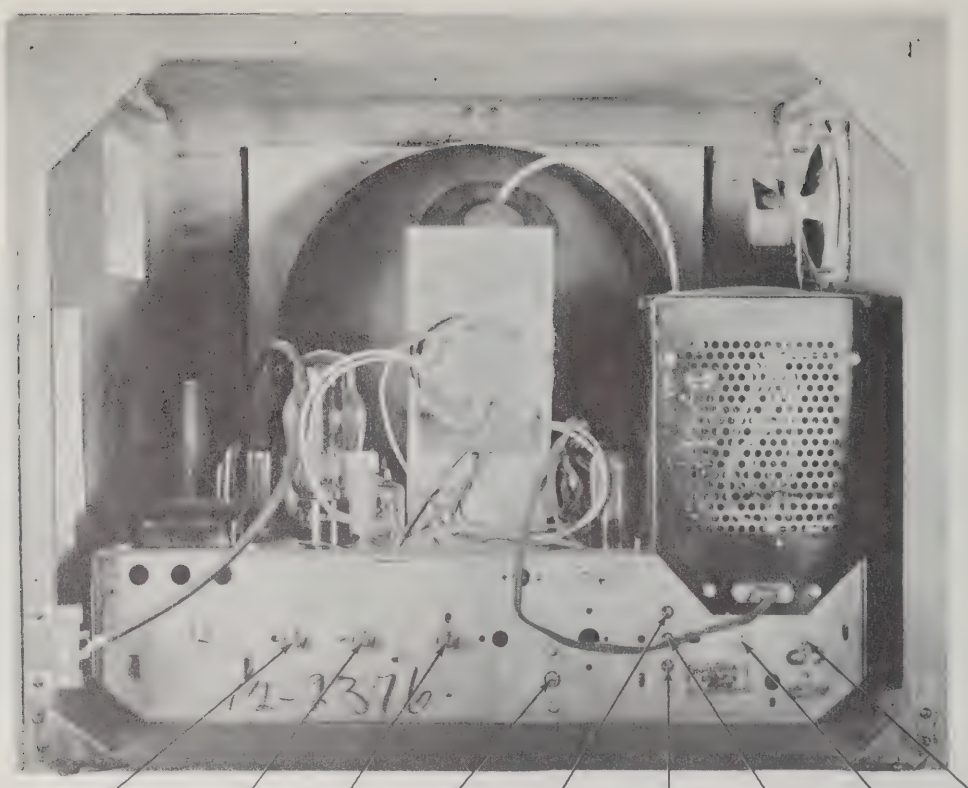
§ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 8 OF V13.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†1.6KΩ	†1.6KΩ	.1Ω	0Ω	0Ω	0Ω	56Ω		
V 2	6AG5	1 Meg.	0Ω	.1Ω	0Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 3	6J6	†1.6KΩ	†1.6KΩ	.1Ω	0Ω	27KΩ	27KΩ	47Ω		
V 4	6AG5	700KΩ	47Ω	.1Ω	0Ω	†450Ω	†450Ω	47Ω		
V 5	6AG5	700KΩ	47Ω	.1Ω	0Ω	†300Ω	†300Ω	47Ω		
V 6	6AG5	.1Ω	100Ω	0Ω	.1Ω	†1.1KΩ	†1.1KΩ	100Ω		
V 7	6AL5	12Ω	2.2KΩ	.1Ω	0Ω	10.5KΩ	0Ω	470KΩ		
V 8	6AC7	0Ω	0Ω	700Ω	10.5KΩ	700Ω	#25KΩ	.1Ω	†5.5KΩ	
V 9	6AL5	1 Meg.	3.9 Meg.	.1Ω	0Ω	0Ω	0Ω	0Ω		
V 10	6AU6	†100KΩ	†1000Ω	†.1Ω	†0Ω	#1000Ω	#40KΩ	†1000Ω		
V 11	6AL5	Inf.	Inf.	†.1Ω	†2Ω	†0Ω	Inf.	†30KΩ		
V 12	6AT6	†470KΩ	†0Ω	†0Ω	†.1Ω	Inf.	Inf.	#390KΩ		
V 13	6V6GT	Inf.	†0Ω	#1000Ω	#250Ω	230KΩ	75KΩ	†.1Ω	†0Ω	
V 14	12AU7	#30KΩ	1 Meg.	0Ω	0Ω	0Ω	#15KΩ	3.9 Meg.	10KΩ	.1Ω
V 15	6C4	#3 Meg. #300KΩ	24Ω	.1Ω	0Ω	#3 Meg. #300KΩ	1.2 Meg.	0Ω		
V 16	6K6GT	0Ω	0Ω	#3.8KΩ	#3.8KΩ	2.2 Meg.	4KΩ 5Ω	.1Ω	5.5KΩ 1.5KΩ	
V 17	6SN7GT	780KΩ	#110KΩ	280KΩ	200KΩ	#120KΩ	0Ω	0Ω	.1Ω	
V 18	6BG6G	Inf.	.1Ω	82Ω	Inf.	1 Meg.	Inf.	0Ω	#8.5KΩ	TOP CAP #12KΩ
V 19	6W4GT	Inf.	Inf.	#12KΩ	Inf.	#250Ω	Inf.	#12KΩ	#12KΩ	
V 20	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #12KΩ
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP Inf.
V 22	5U4G	Inf.	20KΩ	Inf.	37Ω	Inf.	36Ω	Inf.	20KΩ	
V 23	12LP4	0Ω	1 Meg.	PIN 10 #1.2KΩ	PIN 11 75KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V13.
# MEASURED FROM PIN 2 OF V22.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET- REAR VIEW

HORIZONTAL OSCILLATOR ADJUSTMENTS

Pre-set the horizontal frequency trimmer (B1), and the horizontal locking trimmer (B2) 1 1/2 turns counter-clockwise from tight.

a) Turn the set on and tune in a TV station, preferably a test pattern. Set the contrast and brightness controls to approximately their normal setting.

b) Turn the horizontal hold control to maximum clockwise. Adjust the horizontal oscillator slug (B3) until 3 1/2 to 4 1/2 bars, sloping downward to the right, are observed on the screen.

c) Turn the horizontal hold control to maximum counter-clockwise, if the picture remains in sync, momentarily interrupt the signal by switching to another channel and back again.

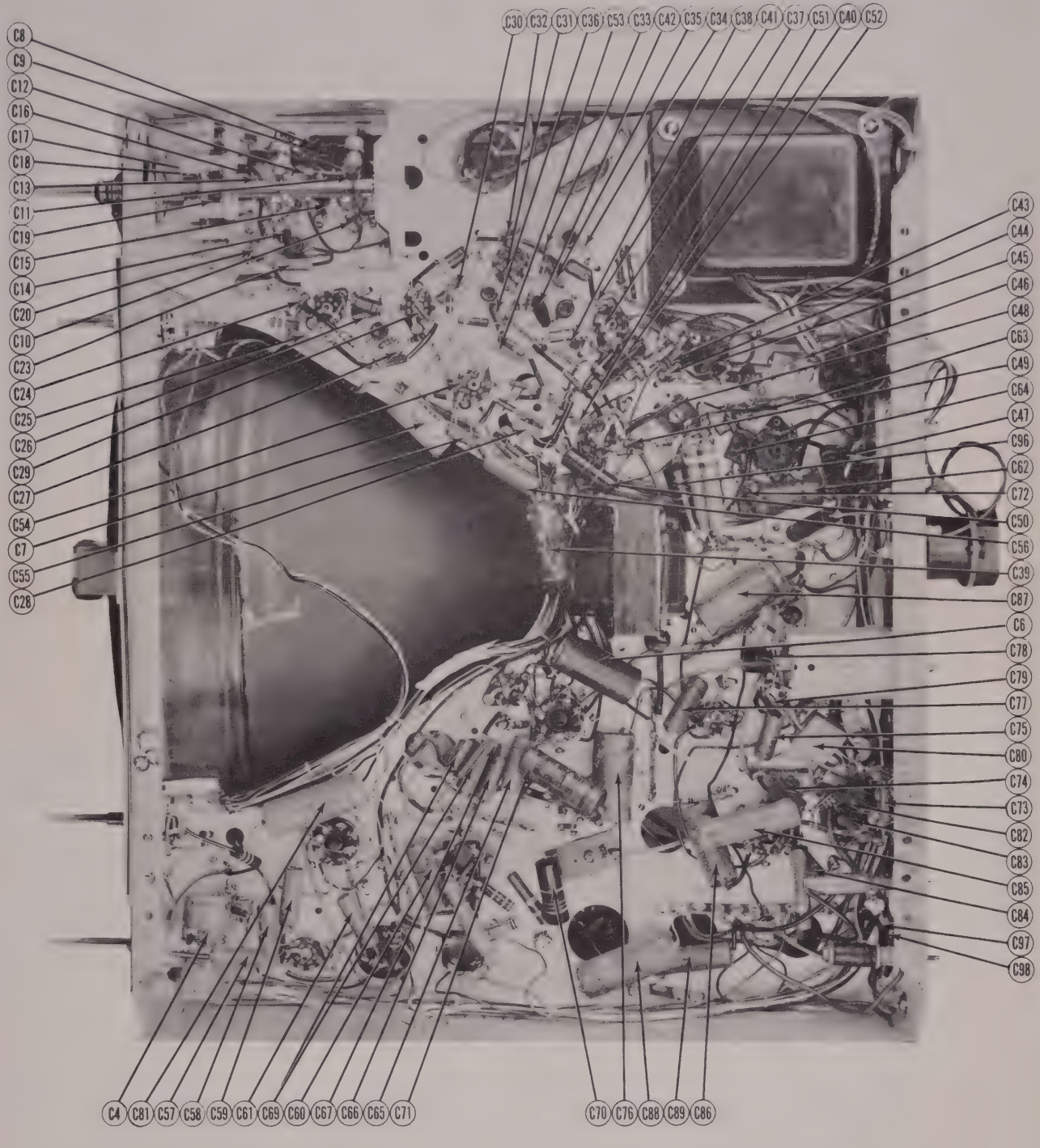
d) Slowly rotate the horizontal hold control clockwise and carefully note the number of sloping bars present just before the picture falls into synchronism. If more than 4 1/2 bars are present, turn B2 one half turn clockwise, if less than 3 1/2 bars are present, turn B2 one half turn counter-clockwise. If B2 is changed repeat steps "b" "c", and "d".

HORIZONTAL WIDTH AND LINEARITY ADJUSTMENTS

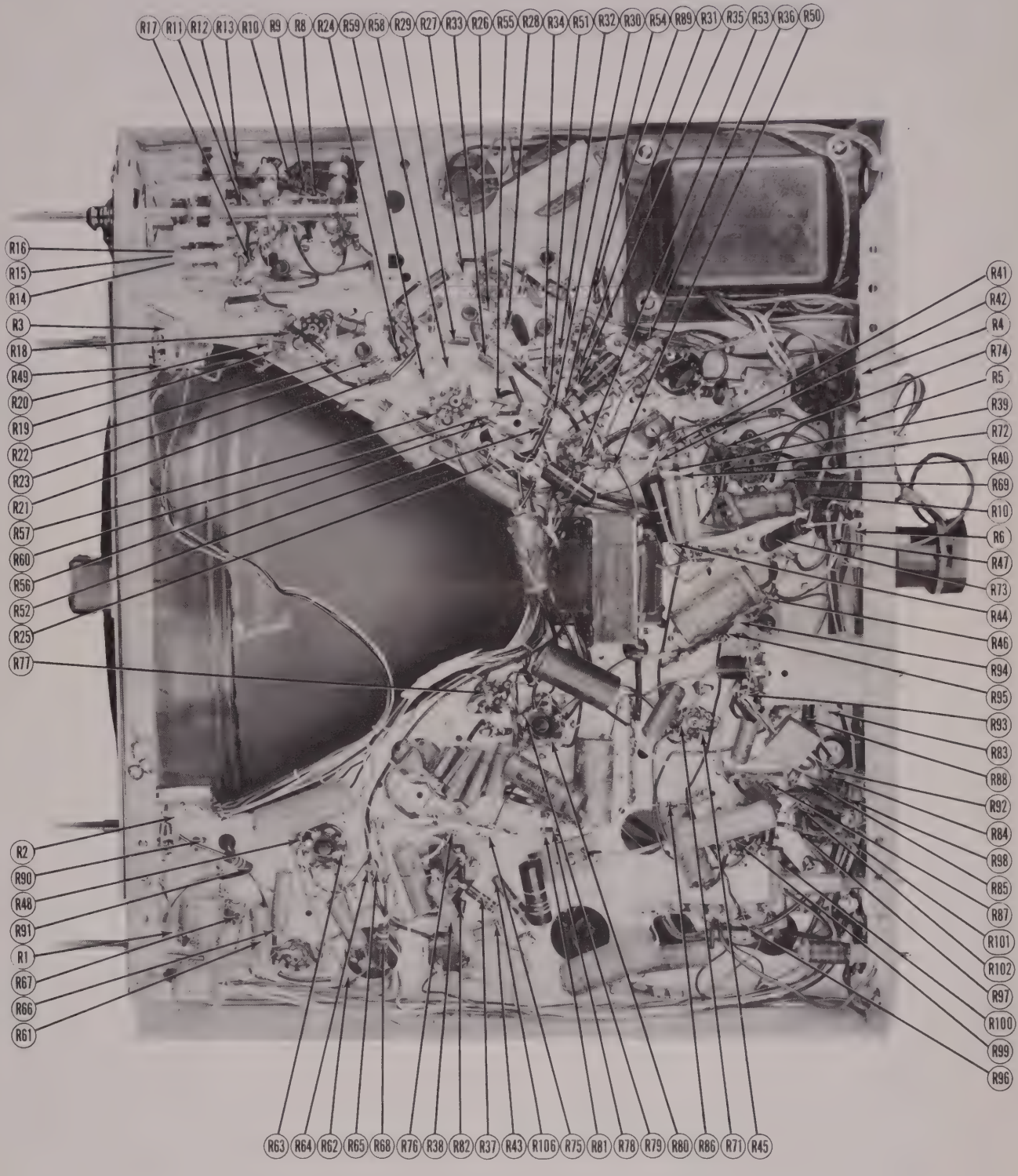
Turn the width slug (B4) all the way in, (clockwise).

Adjust the horizontal drive trimmer (B5) for best compromise between brightness and horizontal linearity, this adjustment affects primarily the overall width, and left side of the picture.

Adjust the horizontal linearity slug (B6), and the horizontal linearity control in model TV-286, for best linearity from left to right. The horizontal linearity control and (B6) on model TV-286 are interacting and should be adjusted alternately for optimum results.



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		TELE-TONE PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amp.	6AC7	6AC7	8N	
V9	DC Restorer-Sync. Clamper	6AL5	6AL5	6BT	
V10	Sound IF	6AU6	6AU6	7BK	
V11	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp.	6AT6	6AT6	7BT	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync. Sep.	12AU7	12AU7	9A	
V15	Vert. Osc.- Vert. Disch.	6C4	6C4	6BG	
V16	Vert. Output	6K6GT	6K6GT	7S	
V17	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V18	Hor. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	HV Rectifier	1B3GT	1B3GT	3C	Model TV-286 only.
V22	LV Rectifier	5U4G	5U4G	5T	
V23A	Picture Tube	12LP4	12LP4	12D	
B	Picture Tube	16AP4	16AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	TELE-TONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	500	TCE-108-D	AF88K			TVL-20	● Filter
B	40	500						▲ Filter
C2A	40	500	TCE-126-D	AF8K10E			TVL-203	● Filter
B	50	200						▲ Decoupling
C3	40	300	TCE-122-D	AF8G			TVL-45	Decoupling
C4	500	6	TCE-129-D	PRS6/500			UHC-506	Bias Filter
C5A	20	450	TCE-125-D	AF4444J			EL-410	● Decoupling
B	10	450					TVA-21	■ Vert. Osc. Decoupling
C	10	450						▲ Vert. Output Decoupling
D	10	450						Video Amp. Screen Bypass
C6	100	50	TCE-144-D	PRS50/100			TVA-17	Vert. Output Cath. Bypass
C7	4	50	TCE-130-D	PRS150/4			TVA-13	Stabilizing Cap.
C8	360		TCC-361-10	GP360M	D6-391	GP2K-390		RF Coupling
C9	360		TCC-361-10	GP360M	D6-391	GP2K-390		RF Cathode Bypass
C10	360		TCC-361-10	GP360M	D6-391	GP2K-390		RF Filament Bypass
C11	360		TCC-361-10	GP360M	D6-391	GP2K-390		RF Plate Decoupling
C12	1		TCC-010-11					RF Coupling
C13	22		TCC-22-12	GP22K	D6-220	GP1K-22		RF Coupling
C14	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	Mixer Decoupling
C15	360		TCC-361-10	GP360M	D6-391	GP2K-390		Mixer Filament Bypass
C16	1		TCC-010-11					Osc. Coupling
C17	4.7		TCC-4.7-11	CN4.7DNPO	D2-4.7	NPOK-4.7		Osc. Feedback
C18	4.7		TCC-4.7-11	CN4.7DNPO	D2-4.7	NPOK-4.7		Osc. Feedback
C19	360		TCC-361-10	GP360M	D6-391	GP2K-390		Osc. Filament Bypass
C20	360		TCC-361-10	GP360M	D6-391	GP2K-390		Decoupling
C21	360		TCC-361-10	GP360M	D6-391	GP2K-390		Switch Bypass *
C22	360		TCC-361-10	GP360M	D6-391	GP2K-390		Switch Bypass *
C23	270	1000	TCM-271-13		D6-271	GP2K-270		IF Coupling
C24	1500		TCC-152-10	GP1500M	D6-152	GP2M-0015		AGC Filter
C25	1500		TCC-152-10	GP1500M	D6-152	GP2M-0015		1st Video IF Decoupling
C26	270	500		1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C27	1500		TCC-152-10	GP1500M	D6-152	GP2M-0015	1FM-215	AGC Filter
C28	1500		TCC-152-10	GP1500M	D6-152	GP2M-0015	1FM-215	AGC Filter
C29A	2000		TCC-2-1	GP2000M	D6-202	GP2M-002	29C5	2nd Video IF Fil. Bypass
B	2000			GP2000M	D6-202	GP2M-002		2nd Video IF Decoupling
C30	270	500	TCM-271-13	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C31A	2000		TCC-2-1	GP2000M	D6-202	GP2M-002	29C5	3rd Video IF Cath. Bypass
B	2000			GP2000M	D6-202	GP2M-002		3rd Video IF Decoupling
C32	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	3rd Video IF Fil. Bypass
C33	1.5		TCC-1.5-11	C11.5CNPO	D2-1.5	NPOK-1.5		IF Coupling
C34	45				DN-47	N750L-47		Fixed Trimmer
C35	270	500	TCM-271-13	1468-00025	D6-271	GP2K-270	1FM-325	IF Coupling
C36	1500		TCC-152-10	GP1500M	D6-152	GP2L-0015	1FM-215	Decoupling
C37	180		TCC-181-11	GP180M	D6-181	GP2K-180	1FM-32	IF Coupling
C38	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	DAGC Decoupling
C39	.25	200	TCP-254-1	P488-25			TC-2	AGC Filter
C40	5	300	TCC-050-11	1468-000005	D2-4.7	NPOK-5	MS-55	Video Diode Filter
C41	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	Video Det.-AGC Fil. Bypass
C42	10000		TCC-103-SP	BPD-10	D6-103	821-01	36C1	Bias Filter
C43	680		TCC-681-10	GP680M	D6-681	GP2K-680	1FM-375	Video Amp. Cath. Bypass
C44	470		TCC-471-10	GP470M	D6-471	GP2K-470	1FM-35	Video Amp. Cath. Bypass
C45	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	Video Amp. Screen Bypass
C46	100			CN100JN750	DN-100	N750L-100		Fixed Trimmer
C47	.1	400	TCPM-104-4	P488-1			TM-1	Video Coupling
C48	2.2		TCC-2.2-11		D2-2.2			Sound IF Coupling
C49	68		TCC-680-10	GP68M	D6-680	GP1K-68	1FM-475	Sound IF Grid Filter
C50	.022	600	TCPM-203-10	P688-022			TM-12	Sound IF Decoupling
C51	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	Sound IF Screen Bypass
C52	.022	600	TCPM-203-10	P688-022			TM-12	Sound IF Decoupling
C53	330	500	TCM-331-14	1468-00035	D6-331	GP2K-330	1FM-335	Diode Load Cap.
C54	5000		TCC-502-SP	BPD-5	D6-502	811-005	29C1	RF Bypass
C55	1500		TCC-152-10	GP1500M	D6-152	GP2L-0015	1FM-215	De-emphasis
C56	.01	600	TCP-103-10	P688-01	D6-103	821-01	TM-11	Audio Coupling
C57	.005	600	TCP-502-10	P688-005	D6-502	811-005	TM-25	Audio Coupling
C58	.002	600	TCP-202-10	P688-002	D6-202	GP2M-002	TM-22	De-emphasis

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA TELE-TONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C59	.01	600	TCP-103-10	P688-01	D6-103	821-01	TM-11	Audio Coupling
C60	.05	600	TCP-503-10	P688-05			TM-15	Bias Filter
C61	.005	600	TCP-502-10	P688-005	D6-502	811-005	TM-25	Output Plate Bypass
C62	.05	600	TCP-503-10	P688-05			TM-15	Sync. Coupling
C63	.100	500	TCM-101-7	1468-0001	D6-101	GP1K-100	1FM-31	Sync. Coupling
C64	390	500	TCM-391-7	1468-0004	D6-392	GP2K-390	1FM-34	Sync. Amp. Cath. Bypass
C65	.002	600	TCP-202-10	P688-002	D6-203	GP2M-002	TM-22	Integrator Net.
C66	.005	600	TCP-502-10	P688-005	D6-505	811-005	TM-25	Integrator Net.
C67	.005	600	TCP-502-10	P688-005	D6-505	811-005	TM-25	Integrator Net.
C68	1500		TCC-152-10	GP1500M	D6-152	GP2L-0015	1FM-215	Fixed Trimmer *
C69	4700	500	TCM-472-9	1467-005	D6-472	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C70	.047	600	TCPM-503-10	P468-047			TM-15	Vert. Discharge
C71	.1	600	TCPM-104-10	P688-1			TM-1	Vert. Sweep Coupling
C72	120	500	TCM-121-8	1468-00015	D6-121	GP2K-120	1FM-315	Horiz. Sync. Coupling
C73	120	500	TCM-121-8	1468-00015	D6-121	GP2K-120	1FM-315	Voltage Divider
C74	3	1500	TCM-050-20					Horiz. Feedback
C75	.002	600	TCP-202-10	P688-002	D6-202	GP2M-002	TM-22	Horiz. Sync. Coupling
C76	.25	400	TCP-254-4	P488-25			TC-2	AFC Filter
C77	.02	400	TCP-203-4	P488-02			TM-12	AFC Filter
C78	.047	600	TCPM-503-10	P688-047			TM-15	AFC Plate Bypass
C79	180	500	TCM-181-29	1468-0002	D6-181	GP2K-180	1FM-32	Horiz. Grid Cap.
C80	2200	500	TCM-222-14		D6-223	GP2M-0022		Horiz. Discharge
C81	.25	600	TCP-254-10	684-25			TC-2	Decoupling §
C82	680	500	TCM-681-8	1468-00075	D6-681	GP2K-680	MS-37	Horiz. Sweep Coupling
C83	10	1500						Horiz. Feedback †
C84	270	500	TCM-271-13	1468-00025	D6-271	GP2K-270	1FM-325	Horiz. Output Screen Bypass
C85	.05	1000	TCP-503-13	P1088-05			TR-15	Horiz. Output Screen Bypass
C86	.25	200	TCP-254-1	P488-25			TC-2	Horiz. Output Cathode Bypass
C87	.25	400	TCP-254-4	P488-25			TC-2	Horiz. Sweep Coupling
C88	.1	1000		1084-1			PX-11	Damper Filter †
C89	.035	600		P688-033				Damper Filter †
C90	.25	600	TCP-254-10	684-25			TC-2	Damper Filter †
C91	.05	600	TCP-503-10	P688-05			TM-15	Damper Filter †
C92	.15	400	TCP-154-4	P488-15				Damper Filter †
C93	500	15KV	TCM-501-1-SP			TV1-502		HV Filter
C94	500	15KV	TCM-501-1-SP			TV1-502		HV Filter †
C95	500	15KV	TCM-501-1-SP			TV1-502		HV Filter †
C96	.1	400	TCPM-104-4	P488-1			TM-1	Picture Tube Cathode Decoupling
C97	.01	400	TCPM-103-4	P488-01	D6-103	821-01	TM-11	Line Filter
C98	.01	400	TCPM-103-4	P488-01	D6-103	821-01	TM-11	Line Filter

* Not used in all models.
† Used only in models TV-284, 287 and 288.
‡ Used only in model TV-286.
§ Early models used 20MFD 450V in this application.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TELE-TONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	TVC-113-D	QI3-133	M-60-Z	B-60-S	Volume control
B	Switch		Not Req.	76-1	SW-A	#	Attach to R1A per instructions
R2A	1.5 Meg	½	TVC-114-DA	B11-138 *	TVC-114-DA		Vert. hold control-panel
B	50KΩ	½		B11-123 *			Horiz. hold control-rear
C	Shaft End			E187 *			Attach per instructions in "Concentrikit"
R3A	750Ω	½	TVC-115-D		TVC-115-D		Contrast control-panel, tapped ⓐ 500Ω
B	100KΩ	½					Brightness control-rear
R4	2.5 Meg.	½	TVC-110-D	QI1-239	M-84-S	B-83	Height control
R5	1500Ω	4	TVC-112-D		10-1500		Focus control-Wire Wound
R6	5000Ω	½	TVC-111-D	QI1-114	M-19-S	B-10	Vert. linearity control
R7	500Ω	½	TVC-515				Horiz. linearity control-See note 1

Switch is attached at factory.
* Additional parts to be used with "Concentrikit".
Note 1. Used in model TV-286 only.

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TELE-TONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R8	330Ω	½	TRC-331-2		RF Cathode
R9	56Ω	½	TRC-560-2		Parasitic Supp.
R10	1000Ω 20%	½	TRC-102-1	BTS-1000	RF Plate Decoupling
R11	4700Ω 5%	½	TRC-472-3	BTS-4700-5%	Mixer Grid Coil Shunt
R12	1 Meg. 20%	½	TRC-105-1		Mixer Grid
R13	1000Ω	½	TRC-102-1	BTS-1000	Mixer Decoupling
R14	27KΩ	½	TRC-273-1	BTS-27K	Osc. Grid
R15	27KΩ	½	TRC-273-1	BTS-27K	Osc. Grid
R16	4.7Ω 20%	½	TRC-470-1		Osc. Cathode
R17	1000Ω 20%	½	TRC-102-1	BTS-1000	Osc. Plate Decoupling
R18	8200Ω 5%	½	TRC-822-3		1st Video IF Grid
R19	47Ω	½	TRC-470-2		1st Video IF Cathode
R20	150Ω	½	TRW-151-1	BW-½-150	Decoupling-Wire Wound
R21	150Ω 20%	½	TRW-151-1	BW-½-150	Decoupling-Wire Wound
R22	330Ω	½	TRC-331-1		AGC Network
R23	11KΩ 5%	½	TRC-113-3		2nd Video IF Coil Shunt
R24	47Ω	½	TRC-470-2		2nd Video IF Cathode
R25	2200Ω 20%	½	TRC-222-1	BTS-2200	AGC Network-See Note 2
R26	8200Ω 5%	½	TRC-822-3	BTS-8200-5%	3rd Video IF Coil Shunt
R27	100Ω	½	TRC-101-2		3rd Video IF Cathode
R28	1000Ω 20%	½	TRC-102-1	BTS-1000	3rd Video IF Decoupling
R29	150Ω 20%	½	TRW-151-1	BW-½-150	Decoupling-Wire Wound
R30	220KΩ	½	TRC-224-2	BTS-220K	AGC Network
R31	470KΩ 20%	½	TRC-474-1	BTS-470K	AGC Rect. Diode Load
R32	47KΩ	½	TRC-473-5	BTA-47K	Voltage Divider
R33	150Ω 20%	½	TRW-151-1	BW-½-150	Decoupling-Wire Wound
R34	2200Ω 20%	½	TRC-222-1	BTS-2200	Bias Network
R35	8200Ω 5%	½	TRC-822-3	BTS-8200-5%	Video Det. Diode Load

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TELE-TONE PART No.	IRC PART No.	IDENTIFICATION CODES
R36	150Ω 20%	½	TRW-151-1		Parasitic Supp.
R37	68KΩ	1	TRC-683-5	BTA-68K	Video Amp. Screen
R38	33KΩ	2	TRC-333-8	BT-2-33K	Video Amp. Screen
R39	39KΩ	2	TRC-393-8	BT-2-39K	Video Amp. Plate
R40	39KΩ	2	TRC-393-8	BT-2-39K	Video Amp. Plate
R41	3900Ω	1	TRC-392-5	BTA-3900	Voltage Divider
R42	2700Ω	1	TRC-272-5	BTA-2700	Voltage Divider
R43	22KΩ	1	TRC-223-5	BTA-22K	Voltage Divider
R44	10KΩ 20%	½	TRC-103-1	BTS-10K	Isolation
R45	1 Meg. 20%	½	TRC-105-1	BTS-1 Meg.	DC Rest. Load
R46	100KΩ 20%	½	TRC-104-1	BTS-100K	Picture Tube Grid
R47	1000Ω 20%	1	TRC-102-5	BTA-1000	Acc. Anode Decoupling
R48	220KΩ	½	TRC-224-2	BTS-220K	Voltage Divider
R49	22KΩ 20%	½	TRC-223-1	BTS-22K	Voltage Divider
R50	100KΩ	½	TRC-104-2	BTS-100K	Sound IF Grid
R51	1000Ω 20%	½	TRC-102-1	BTS-1000	Sound IF Cathode
R52	100KΩ	½	TRC-104-2	BTS-100K	Sound IF Screen
R53	47KΩ	½	TRC-473-2	BTS-47K	Voltage Divider
R54	1000Ω 20%	½	TRC-102-1	BTS-1000	Sound IF Decoupling
R55	220Ω 20%	½	TRC-221-1		Balancing
R56	220Ω 20%	½	TRC-221-1		Balancing
R57	5.1Ω	½	TRC-51A-2		Ratio Det. Filament-Wire Wound
R58	15KΩ 5%	½	TRC-153-3	BTS-15K-5%	Ratio Det. Diode Load
R59	15KΩ 5%	½	TRC-153-3	BTS-15K-5%	Ratio Det. Diode Load
R60	47KΩ 20%	½	TRC-473-1	BTS-47K	De-emphasis
R61	470KΩ 20%	½	TRC-474-1	BTS-470K	AF Grid
R62	390KΩ 20%	½	TRC-394-1	BTS-390K	AF Plate
R63	100KΩ	½	TRC-104-2	BTS-100K	Output Grid
R64	180KΩ 5%	½	TRC-184-3	BTS-180K-5%	Voltage Divider
R65	330KΩ 5%	½	TRC-334-3	BTS-330K-5%	Voltage Divider
R66	4700Ω 5%	½	TRC-472-3	BTS-4700-5%	Voltage Divider
R67	470KΩ 20%	½	TRC-474-1	BTS-470K	Voltage Divider
R68	390Ω	1	TRC-391-5	BW-1-390	Filter
R69	1 Meg. 20%	½	TRC-105-1	BTS-1 Meg.	Sync. Sep. Grid
R70	15KΩ 20%	2	TRC-153-7	BT-2-15K	Sync. Sep. Plate
R71	3.9 Meg. 20%	½	TRC-395-1	BTS-3.9 Meg.	Sync. Sep. Grid
R72	10KΩ 20%	½	TRC-103-1	BTS-10K	Sync. Sep. Cathode
R73	15KΩ 20%	2	TRC-153-7	BT-2-15K	Decoupling
R74	22KΩ 20%	½	TRC-223-1	BTS-22K	Integrator
R75	8200Ω	½	TRC-822-2	BTS-8200	Integrator
R76	8200Ω	½	TRC-822-2	BTS-8200	Integrator
R77	1.2 Meg. 5%	½	TRC-125-3	BTS-1.2 Meg. 5%	Vert. Osc. Grid
R78	220KΩ	½	TRC-224-2	BTS-220K	Vert. Osc. Plate
R79	1500Ω	½	TRC-152-2	BTS-1500	Vert. Output Cathode
R80	2.2 Meg.	½	TRC-225-2	BTS-2.2 Meg.	Vert. Output Grid
R81	8200Ω	½	TRC-822-2	BTS-8200	Vert. Peaking
R82	3300Ω	1	TRC-332-5	BTA-3300	Vert. Output Decoupling
R83	560KΩ	½	TRC-564-2	BTS-560K	Horiz. AFC Grid
R84	180KΩ	½	TRC-184-2	BTS-180K	Horiz. AFC Cathode
R85	100KΩ 5%	1	TRC-104-6	BTA-100K-5%	Horiz. AFC Cathode
R86	8200Ω	½	TRC-822-2	BTS-8200	Horiz. AFC Filter Network
R87	150KΩ	½	TRC-154-2	BTS-150K	Horiz. AFC Filter Network
R88	3.3 Meg. 5%	1	TRC-335-6	BTA-3.3 Meg. 5%	Voltage Divider
R89	30KΩ	½	TRC-303-12		Voltage Divider
R90	120KΩ	½	TRC-124-2	BTS-120K	Voltage Divider
R91	270KΩ	1	TRC-274-5	BTA-270K	Voltage Divider
R92	100KΩ 1%	1	TRC-104-8P		Horiz. Osc. Grid
R93	10KΩ	½	TRC-103-2	BTS-10K	Horiz. Osc. Transformer Shunt
R94	100KΩ	1	TRC-104-5	BTA-100K	Horiz. Osc. Plate
R95	10KΩ	½	TRC-103-2	BTS-10K	Filter
R96	56KΩ 20%	½	TRC-563-1	BTS-56K	Filter
R97	68Ω 20%	½	TRC-680-1		Parasitic Supp.
R98	1 Meg.	½	TRC-105-2	BTS-1 Meg.	Horiz. Output Grid
R99	82Ω	1	TRC-820-5	BW-1-82	Horiz. Output Cathode-See Note 3
R100	8200Ω	2		BT-2-8200	Horiz. Output Screen-See Note 4
R101	270KΩ	½	TRC-274-1	BTS-270K	Feedback-See Note 5
R102	560KΩ	½	TRC-564-2	BTS-560K	Feedback
R103	12KΩ	20		DG-12,000	Damper Filter-Wire Wound
R104	3.3Ω	½			HV Rect. Filament-Wire Wound-See Note 6
R105	1 Meg. 20%	1	TRC-105-1		HV Filter-See Note 7
R106	15Ω	1	TRW-150-5	BW-1-15	Bias Network-Wire Wound
R107	1500Ω	2	TRC-152-8	BT-2-1500	Focus Coil Shunt-See Note 8
R108	27KΩ	2	TRC-273-8	BT-2-27K	Horiz. Output Screen-See Note 9
R109	56Ω	1	TRC-560-5	BW-1-56	Horiz. Linearity Network-See Note 9
R110	4.7Ω	½	TRC-47A-2		HV Rect. Filament-See Note 9
R111	88KΩ	1	TRC-883-5		HV Rect. Load -See Note 9
R112	680KΩ	2	TRC-684-8		HV Rect. Load -See Note 9
R113	680KΩ	2	TRC-684-8		HV Rect. Load -See Note 9
R114	680KΩ	2	TRC-684-8		HV Rect. Load -See Note 9

Note 2. Model TV-286 uses 1000Ω resistor in this application.
Note 3. Model TV-286 uses 100Ω, 2 watt resistor in this application.
Note 4. Model TV-286 uses 27KΩ, 2 watt resistor in this application.
Note 5. Not used in model TV-286.
Note 6. Model TV-286 uses 4.7Ω resistor in this application.
Note 7. Model TV-286 uses 470KΩ, 1 watt resistor in this application.
Note 8. Not used in all models.
Note 9. Used in model TV-286 only.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓐ 1.7A	750VCT .170ADC SEC. 4	ⓐ 3A SEC. 5	6.3VAC ⓐ 1.5A	TTR-170-D		P-3068	
		6.3VAC ⑤ 1.35A	12.6VCT ⓐ 3.6A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	92Ω	100Ω	TTR-161-D	A-8111	A-3000	TBO-1 ⑤	Vert. Block Osc. Trans.
T3A	120Ω	SEC. 1	TTR-172-D ③	A-8119	HVO-5	TFB-4	Hor. Output Trans.
	Tap ⓐ 95Ω	10.6Ω Tap ⓐ .6Ω					
		SEC. 2 0Ω					
		SEC. 3 0Ω					
B	490Ω Tap ⓐ 176Ω	SEC. 1 9.5Ω Tap ⓐ .6Ω	TTR-183-D ⑦	A-8128	HVO-3	TFB-1	Hor. Output Trans.
		SEC. 2 0Ω					
T4	590Ω	7.2Ω	TTR-153-2D	A-8116	A-3035 ⑥	TSO-4	Vert. Output Trans.
T5A	14Ω		TTR-159-D	DY-1	MD-1		Hor. Deflection Coil
B	63Ω						Vert. Deflection Coil
T6A	480Ω		TLF-522-D ③		MF-2		Focus Coil
B	260Ω		TLF-545-D ⑦		MF-1		Focus Coil

⑤ Drill one new mounting hole.
③ Used in model TV-286.
⑥ Drill new mounting holes.
⑦ Used in models TV-284, TV-287, TV-288.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA TELE-TONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.5KΩ	3.3Ω	310Ω	.5Ω	TTR-165-D	A-3877	A-2930	RO-9 ⑤	⑤ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA TELE-TONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105		① Replace output transformer to match 6-8Ω voice coil.
SP1A	PM	3.3Ω	TSP-462 ②	MOD. P5-X	5A1	② Used in models TV-287, TV-288
B	PM	3.3Ω	TSP-465-D ③	ST-120 MOD. D10-S ①	10A31	③ Used in model TV-286
C	PM	3.3Ω	TSP-80 ④	ST-117 MOD. P8-T	8A31	④ Used in model TV-284
	CONE DIA.	V. C. DIA.				
SP2A	4 3/8"	9/16"				
B	9 3/8"	1"				
C	7 3/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA TELE-TONE PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No.	INSTALLATION NOTES
L1	.170A	39Ω	.8 Henry	TTR-170-D	C-2325 ⑤	C-2974 ⑤	TR-4200 ⑤	⑤ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TELE-TONE PART No.	MEISSNER PART No.	NOTES
L2	RF Choke	.1Ω				Part of tuner.
L3	RF End Inductor	0Ω				Part of tuner.
L4	RF End Inductor	0Ω				Part of tuner.
L5	RF Choke	.1Ω				Part of tuner. Not used in all models.
L6A	Osc. Coil	0Ω		TLF-120-1D		Channel #2
B	Osc. Coil	0Ω		TLF-120-2D		Channel #3
C	Osc. Coil	0Ω		TLF-120-3D		Channel #4
D	Osc. Coil	0Ω		TLF-120-4D		Channel #5
E	Osc. Coil	0Ω		TLF-120-5D		Channel #6
F	Osc. Coil	0Ω		TLF-120-6D		Channel #7
G	Osc. Coil	0Ω		TLF-120-7D		Channel #8
H	Osc. Coil	0Ω		TLF-120-8D		Channel #9
I	Osc. Coil	0Ω		TLF-120-9D		Channel #10
J	Osc. Coil	0Ω		TLF-120-10D		Channel #11
K	Osc. Coil	0Ω		TLF-120-10D		Channel #12
L	Osc. Coil	0Ω		TLF-120-10D		Channel #13
L7	1st Video IF	.1Ω		TLF-147-D		Part of tuner.
L8	Fil. Choke	0Ω		TLF-520-D		
L9	Plate Choke	1.3Ω		TLF-146-D		
L10	2nd Video IF	.1Ω		TLF-147-D		
L11	Fil. Choke	0Ω		TLF-144-D		
L12	Plate Choke	1.3Ω		TLF-146-D		
L13	3rd Video IF	.1Ω		TLF-148-D		
L14	Fil. Choke	0Ω		TLF-520-D		
L15	32.8MC Trap	0Ω		TLF-157-D		

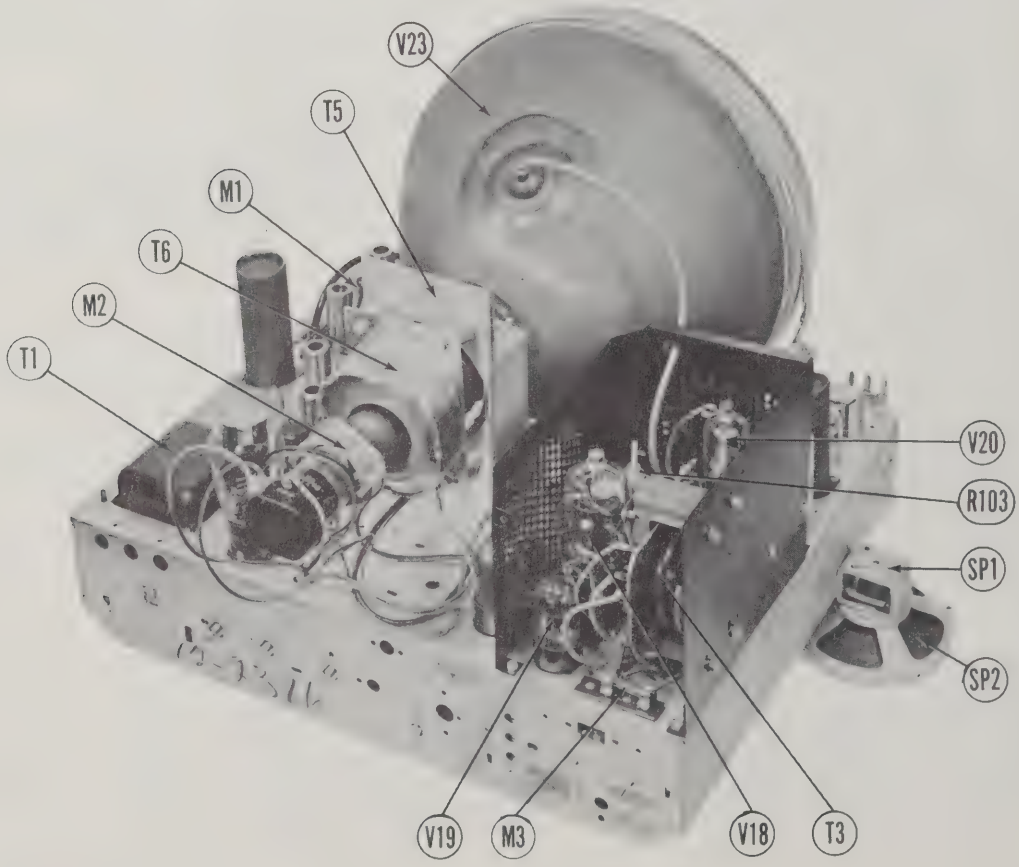
PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TELE-TONE PART No.	MEISSNER PART No.	
L16	Plate Choke	1.3Ω		TLF-146-D		
L17	4th Video IF	.1Ω		TLF-147-D		
L18	Peaking	7.5Ω		TLF-513-D		Inductance-120 microhenries.
L19	Peaking	20Ω		TLF-514-D		Inductance-600 microhenries.
L20	Peaking	11Ω		TLF-526-D		210 microhenries. Wound on 18KΩ resistor.
L21	4.5 MC Trap	1Ω		TLF-525-D		Inductance-300 microhenries.
L22	Peaking	15Ω		TLF-527-D		
L23	Sound IF	1.8Ω		TLF-114-D		
L24	Ratio Det. Transformer	4Ω	2Ω	TLF-531-D		
L25	Hor. Osc. Transformer	120Ω		TTR-157		
L26A	Width Cont.	.3Ω		TLF-505		Used in models TV-284, TV-287, TV-288.
B	Width Cont.			TLF-529		Used in model TV-286
L27A	Horiz. Linearity	26Ω		TLF-506		Used in models TV-284, TV-287, TV-288
B	Horiz. Linearity			TLF-530		Used in model TV-286

MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
M1	RF Tuner		
M2	Ion Trap		
M3	Fuse	TFU-2	Type AGC, .25A
	Trimmer Assy.	TAS-501-D	Horiz. Locking Range (10-160MMF), Horiz. Freq. (40-370MMF), Horiz. Drive (40-370MMF)
	Cabinet	TCB-265-D	Model TV-284
	Cabinet	TCB-264-D	Model TV-286
	Cabinet	TCB-267-D	Model TV-287
	Cabinet	TCB-260-D	Model TV-288
	Safety Glass	TGL-111-D	Model TV-284
	Safety Glass	TGL-110-D	Model TV-286
	Safety Glass	TGL-113-D	Model TV-287
	Safety Glass	TGL-108-D	Model TV-288
	Back	TBK-165-D	Model TV-284
	Back	TAS-529	Model TV-286
	Back	TDK-168-D	Model TV-287
	Back	TBK-161-D	Model TV-288
	Knob	TKN-116-D	Dual
	Knob	TKN-117-D	Dual Indicator



CHASSIS-TOP VIEW

FINE TUNING DRIVE CORD STRINGING

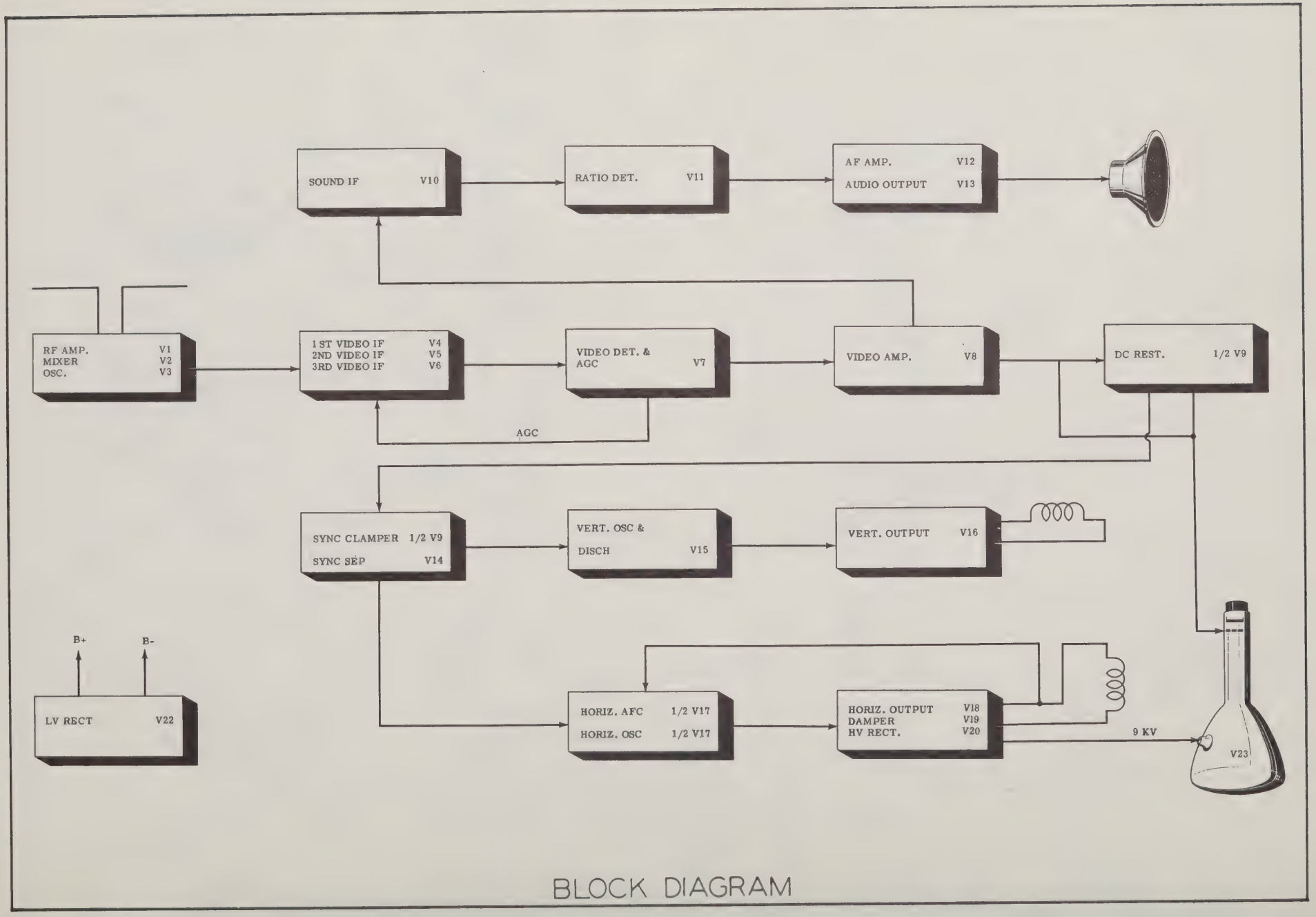
DISASSEMBLY INSTRUCTIONS

MODEL TV-286

1. Remove four push-on type control knobs.
2. Remove eight screws holding rear cover. Remove cover.
3. Remove picture tube base socket.
4. Disconnect deflection and focus yoke plug.
5. Loosen two screws holding antenna terminal strip. Free strip from cabinet.
6. Remove speaker plug.
7. Remove HV cap from picture tube.
8. Remove four 3/8" hex head bolts holding TV chassis. Remove chassis.
9. Unsolder mounting ring ground wire from speaker plug.
10. Remove four 11/32" hex nuts holding speaker. Remove speaker.

MODEL TV-287

1. Remove four push-on type control knobs.
2. Remove eight screws holding rear cover. Remove cover.
3. Loosen two screws holding antenna terminal strip. Free antenna terminal strip from cabinet.
4. Remove speaker plug from chassis.
5. Remove four 3/8" hex head bolts holding chassis. Remove chassis.
6. Remove two 11/32" hex nuts holding speaker. Remove speaker.



BLOCK DIAGRAM

PHOTOFACT* Folder

ZENITH MODELS
G2420E, G2420-EOX, G2420R, G2420-ROX, G2454, G2454-ROX

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ZENITH MODELS
G2420E, G2420-EOX, G2420R,
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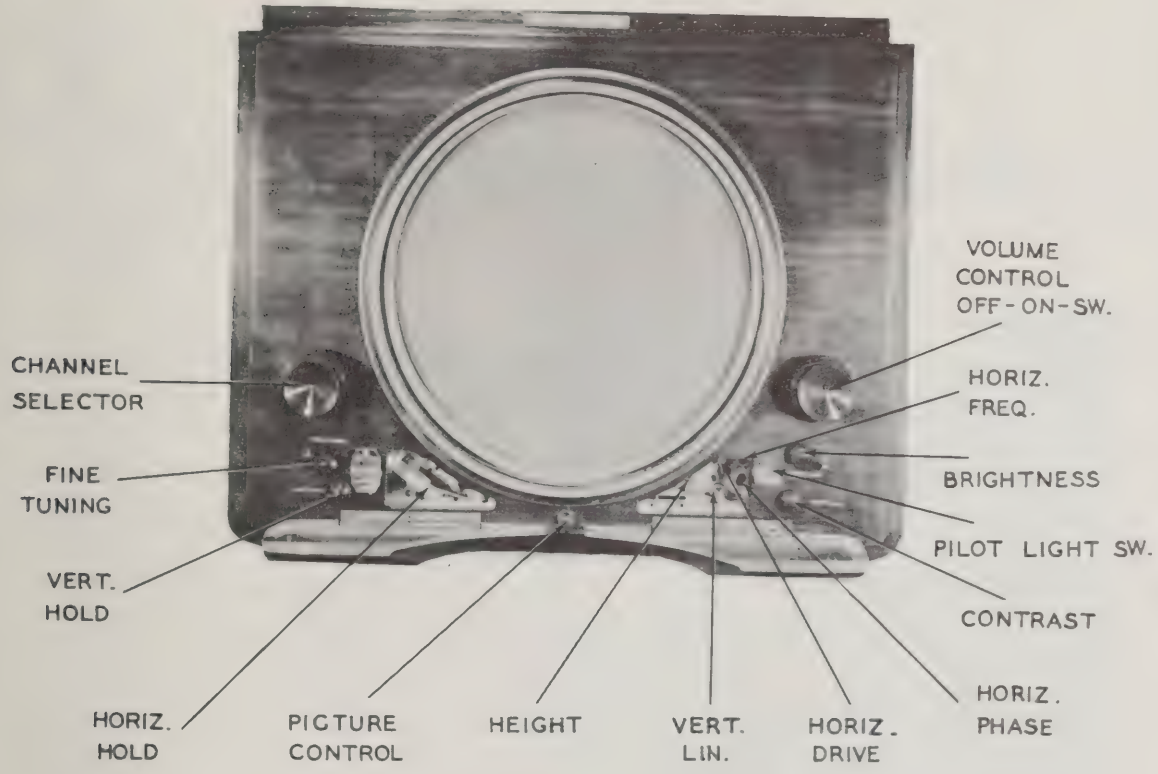

ZENITH MODEL G2420-ROX

TRADE NAME	Zenith, Models G2420E (Ch. 24G20), G2420-EOX (Ch. 24G20-OX), G2420R (Ch. 24G20), G2420-ROX (Ch. 24G20-ROX), G2454 (Ch. 24G21), G2454-ROX (Ch. 24G21-OX)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-Four
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE	Channels 2 thru 13 — RATING 2.2 Amp. @ 117 Volts AC

INDEX

AGC Adjustment 19
Alignment Instructions 6, 7
Block Diagram 20
Disassembly Instructions 20
Fine Tuning Drive Cord Stringing 20
Horiz. Sweep Circuit Adjustment 19
Parts List and Description 15, 16, 17, 18
Photographs
Capacitor Identification 11, 22
Chassis-Top View 3, 19
Photographs (continued)
Power Supply Chassis 14
RF Tuner 10
Resistor Identification 12, 21
Trans., Inductor and Alignment Identification 4, 9
Schematic (Main) 2
Schematic (Tuner #S-15940) 13
Tube Placement Chart 5
Voltage and Resistance Measurements 8

ZENITH MODELS G2420E, -EOX, G2420R, -ROX (Ch. 24G20, -OX), G2454, -ROX (Ch. 24G21, -OX)

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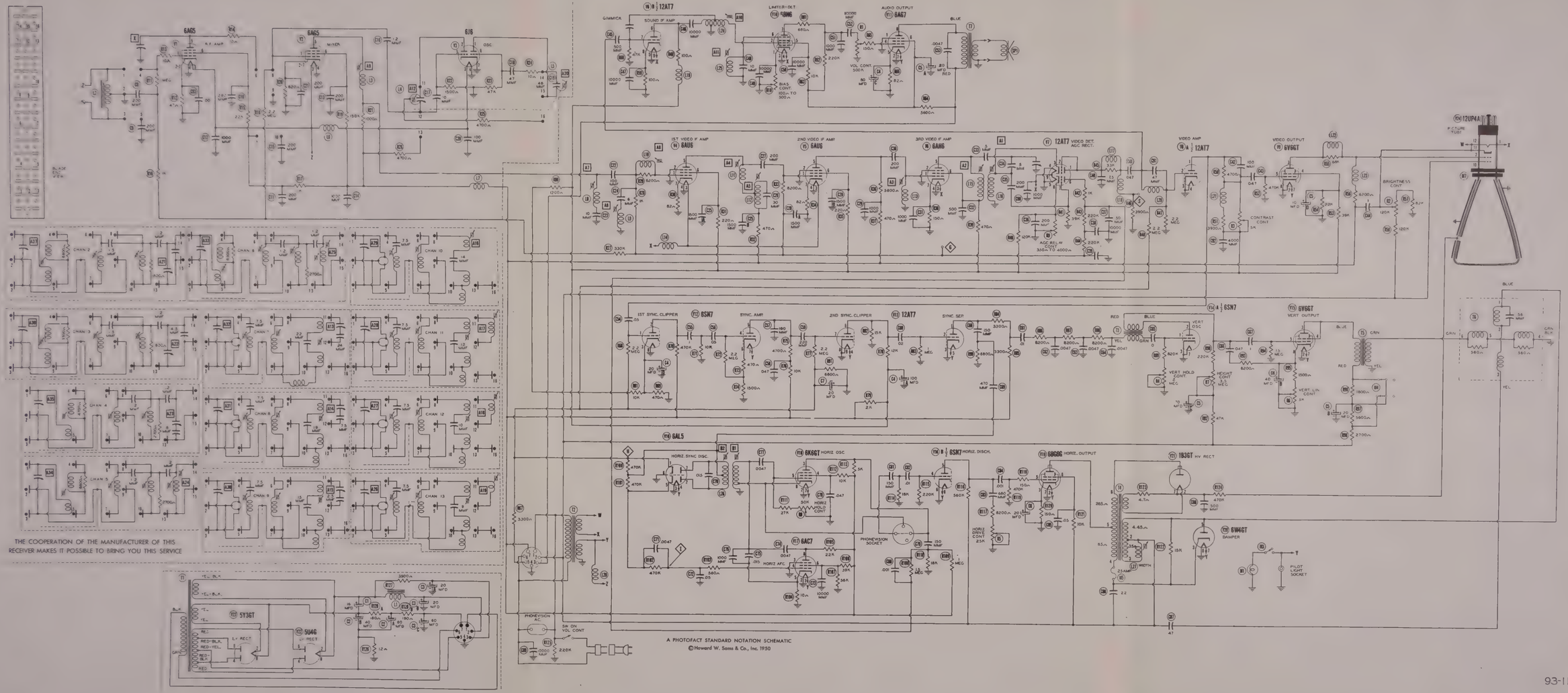

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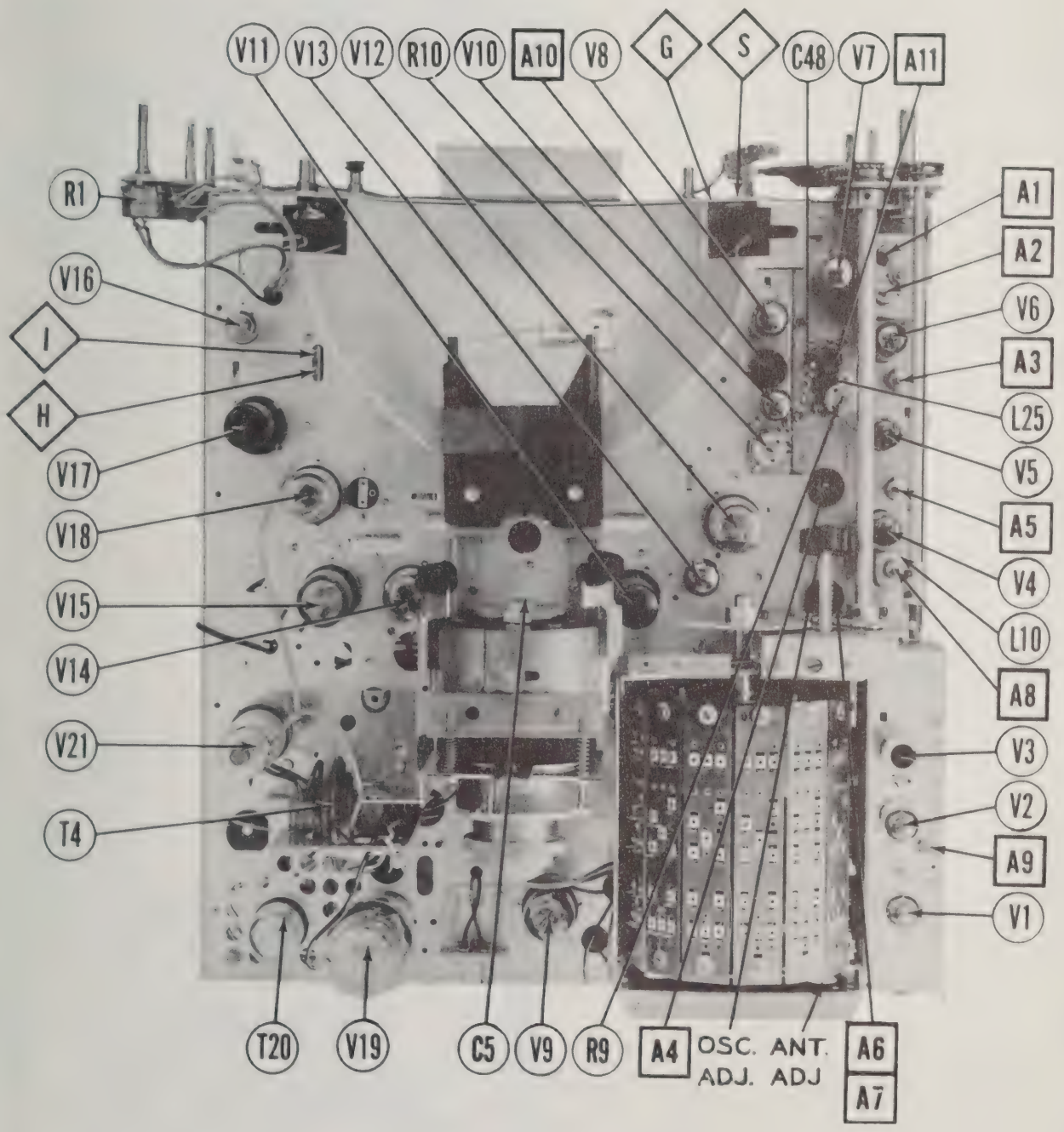
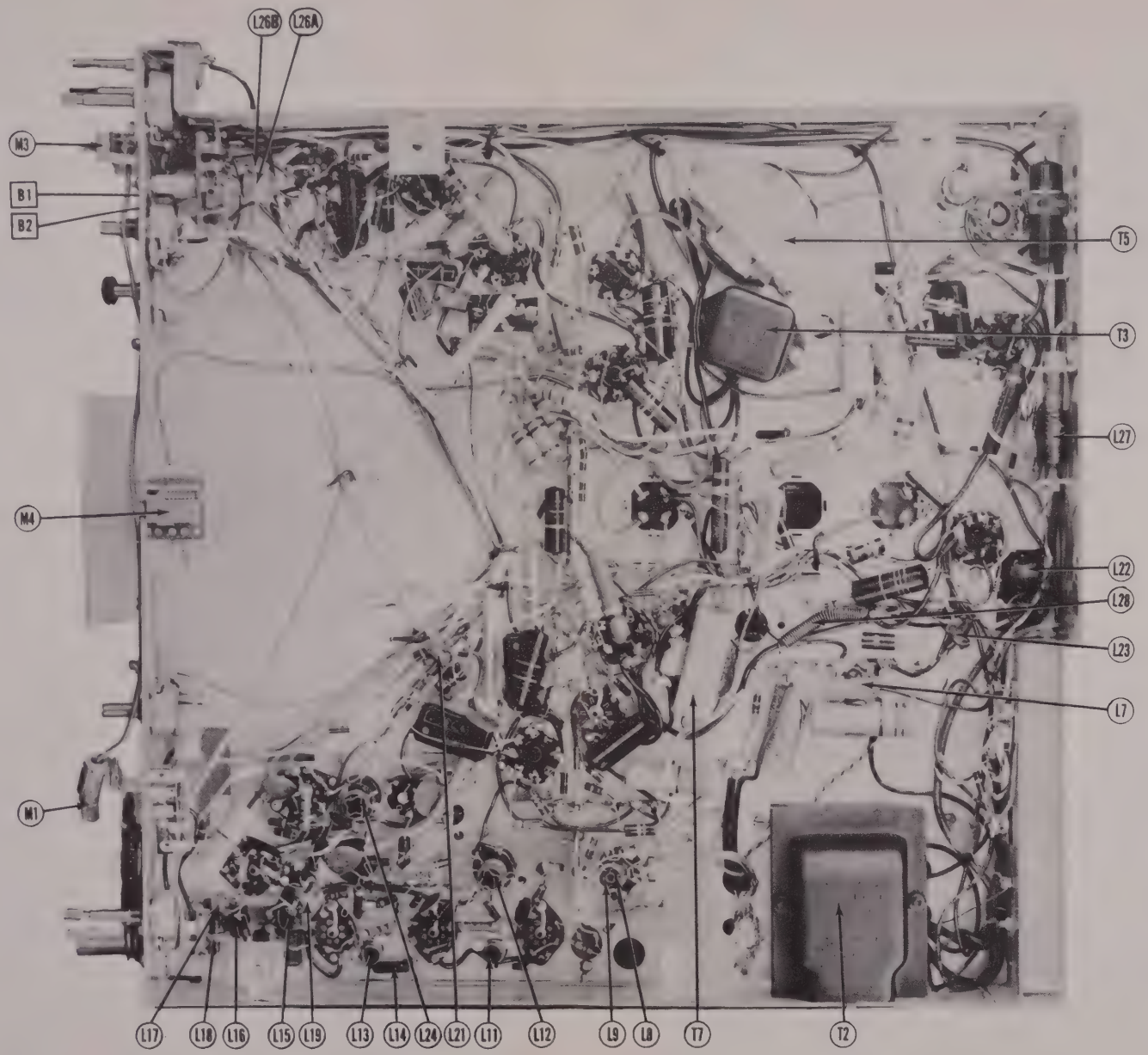
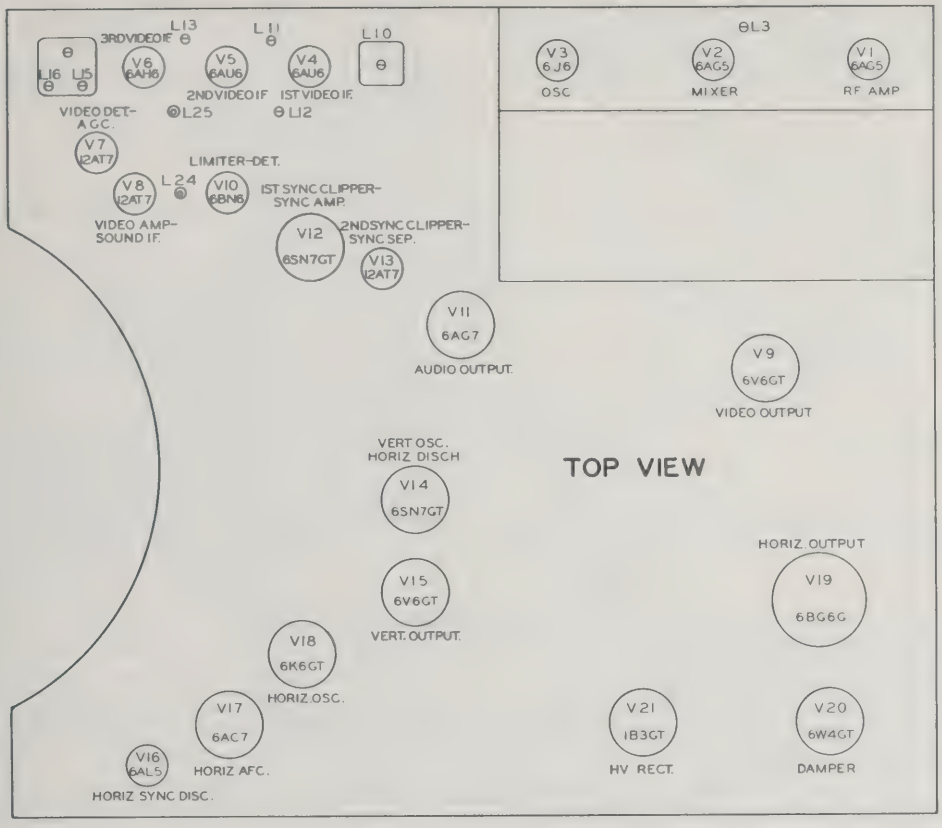
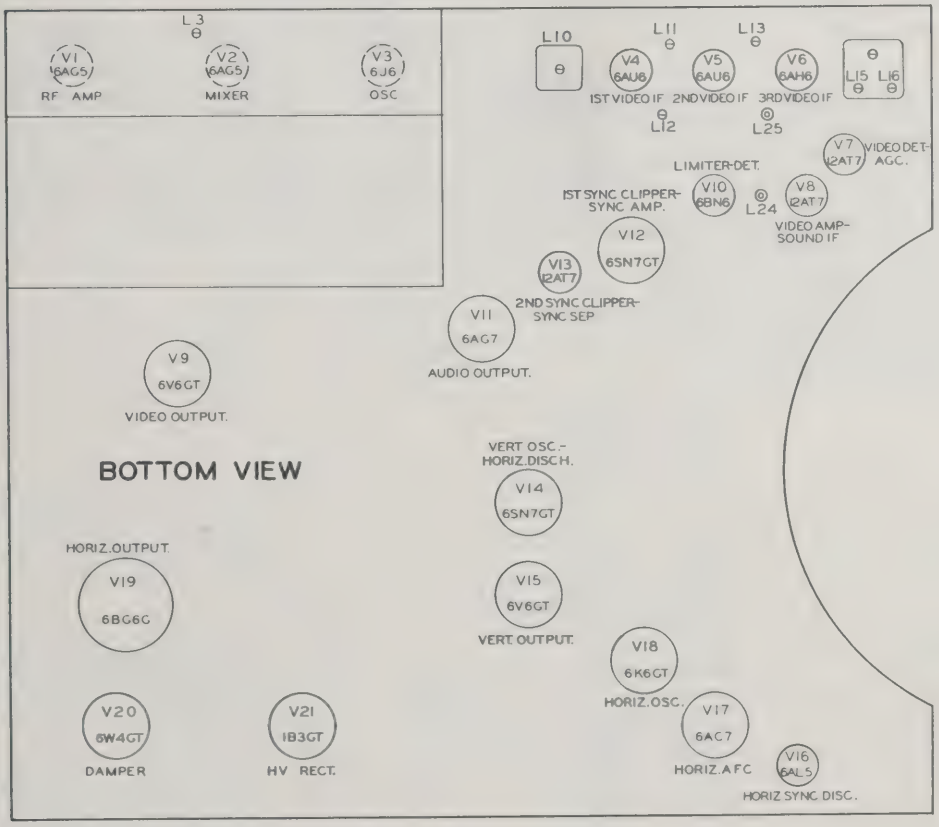


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal discharge tube (V14) from its socket.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 1/2 volt battery to test point "G". Connect the positive lead to chassis.
Remove the local oscillator tube (V2) to prevent erroneous indications.
During video IF alignment keep sweep generator attenuated to maintain a peak to peak response of 1.5 volts on the oscilloscope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (Grid) of 6AH6 (V6). Low side to chassis.	24MC (10MC SWP)	22.6MC 25.9MC	Any	Vert. Amp. to test point "S". Low side to chassis.	A1, A2	Adjust for response curve similar to Fig 1. The peaks should be of equal amplitude. Attenuate sweep generator to maintain 1.5 volt response peak to peak.
2.	.005MFD	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	"	25.3MC	"	"	A3	Adjust for response curve similar to Fig 2.
3.	.005MFD	High side to pin 1 (Grid) of 6AU6 (V4). Low side to chassis.	"	23.2MC 25.2MC	"	"	A4	Adjust for response curve similar to Fig 3.
4.	.005MFD	"	"	27.3MC	"	"	A5	Adjust for minimum marker indication at the 27.3MC point on the curve.
5.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	"	"	"	"	A6	Adjust for minimum marker indication at the 27.3MC point on the curve. If marker cannot be seen, detune trap coil A5 by inserting the iron end of a tuning wand into the coil. DO NOT DETUNE TRAP BY TURNING THE ADJUSTMENT SCREW.
6.	Direct	"	"	19.8MC	"	"	A7	Adjust for minimum marker response at the 19.8MC point on response curve. If marker cannot be seen, remove the bias battery and connect an unmodulated 19.8MC RF signal in place of the sweep generator and adjust for minimum deflection on a VTVM connected in place of the oscilloscope.
7.	Direct	"	"	21.3MC 23.2MC 25.1MC 25.8MC 27.3MC	"	"	A8, A9	Adjust for reasonably flat topped response curve similar to Fig 4 with markers as shown. If necessary retouch A1 thru A6 for optimum response.

SOUND IF ALIGNMENT

The limiter-detector input coil (A10) must be adjusted with the signal input below the limiting level of the tube.
The limiting level can be found by decreasing the output of the signal generator until a sharp drop in response amplitude is noted, below this point the tube is not limiting.
If necessary attenuate the signal generator while adjusting(A10)to keep the input signal below the limiting level. The quadrature coil(A11) and the bias control (R10) may be adjusted above the limiting level if desired.
It should be noted that the negative leg of the "S" curve is approximately twice as long as the positive leg, and that adjustment of A10 causes the positive leg to broaden. Proper adjustment of A10 is indicated by maximum amplitude of the "S" curve with the positive leg at its narrowest point. The quadrature coil (A11) should not be adjusted unless it is definitely known to be out of alignment. The proper point for the marker placement is found by reducing the oscilloscope horizontal gain control until a single vertical line is observed. The break in the vertical line is the point where the markers should set by adjusting A11.
If no oscilloscope is available, the sound IF system may be aligned using a TV station as follows: (a) Connect a variable attenuator pad between the antenna and the set and adjust it until the signal falls below the detector limiting level as indicated by a background hiss similar to superregeneration. (b) Adjust A10, A11 and R10 for maximum audio with minimum buzz.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.005MFD	High side to pin 2 (Grid) of 12AT7 (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any channel not used locally	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, R10	READ CAREFULLY INSTRUCTIONS ABOVE. Adjust for response curve similar to Fig 6. Slightly retouch A11 and R10 while receiving a TV station, for optimum results.

TUNER ALIGNMENT

These receivers employ two tuners, determine which tuner is employed in the set being aligned and use the alignment instructions for that tuner. The S-15940 tuner is identified by a blue disc type symbol painted on the turret and RF shelf.
The RF and overall oscillator circuits pre-set at the factory and should not require adjustment in the field. Alignment of these circuits should not be attempted unless they are definitely known to be out of alignment.

TUNER #S-15020 OSCILLATOR ALIGNMENT

The trimmer "X" is located in the place circuit of the RF amplifier for the purpose of compensating for stray circuit capacity. This trimmer is pre-set at the factory and should not require adjustment in the field.
Turn the fine tuning control until the yellow dot on the shaft points upward, this is mid-position of the fine tuning range.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Replace the local oscillator tube (V3).
Connect the negative lead of a 4 1/2 volt battery to test point "G", connect the positive lead to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	195MC (10MC SWP)	193.25MC 197.75MC	10	Vert. Amp. to test point "S". Low side to chassis.	A12	Adjust to place sound marker as shown in Fig 5. See instructions under "tuner alignment" above.
10.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"	A13	Adjust to place sound marker as shown in Fig 5.
			183MC (10MC SWP)	181.25MC 185.75MC	8		A14	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A15	
11.	"	"	195MC (10MC SWP)	193.25MC 197.75MC	10	"	A16	Adjust to place sound marker as shown in Fig 5. If step 9 has been performed, omit this step.
12.	"	"	201MC (10MC SWP)	199.25MC 203.75MC	11	"	A17	Adjust to place sound marker as shown in Fig 5.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A18	
			213MC (10MC SWP)	211.25MC 215.75MC	13		A19	
13.	"	"	69MC (10MC SWP)	67.25MC 71.75MC	4	"	A20	Adjust to place sound marker as shown in Fig 5. See instructions "under tuner alignment" above.
14.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"	A21	Adjust to place sound marker as shown in Fig 5.
			63MC (10MC SWP)	61.25MC 65.75MC	3		A22	
15.	"	"	69MC (10MC SWP)	67.25MC 71.75MC	4	"	A23	Adjust to place sound marker as shown in Fig 5. If step 13 has been performed, omit this step.
16.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"	A24	Adjust to place sound marker as shown in Fig 5.
			85MC (10MC SWP)	83.25MC 87.75MC	6		A25	

ALIGNMENT INSTRUCTIONS (CONT.)

TUNER #S-15020 ANTENNA ALIGNMENT

Leave the 4 1/2 volt bias battery connected as in oscillator alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 213.75MC	13	Vert. Amp. to test jack "S". Low side to chassis.	A26	Adjust for maximum amplitude with best symmetry as per Fig 5. Recheck marker positions. Attenuate sweep generator so pattern on scope does not exceed 3 volt.
18.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"	A27	"
			201MC (10MC SWP)	199.25MC 203.75MC	11		A28	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A29	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A30	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A31	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A32	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A33	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A34	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A35	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A36	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A37	

TUNER #S-15940 OSCILLATOR ALIGNMENT

Connect the negative lead of a 4 1/2 volt battery to test point "G", connect the positive lead to chassis.
Replace the oscillator tube (V3).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	195MC (10MC SWP)	193.25MC 197.75MC	10	Vert. Amp. to test jack "S". Low side to chassis.	A38	Adjust to place sound marker as shown in Fig 5.
20.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	A39	"
			207MC (10MC SWP)	205.25MC 209.75MC	12		A40	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A41	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A42	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A43	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A44	
21.	"	"	69MC (10MC SWP)	67.25MC 71.75MC	4	"	A45	"
22.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A46	"
			79MC (10MC SWP)	77.25MC 81.75MC	5		A47	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A48	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A49	

TUNER #S-15940 RF ALIGNMENT

Leave the 4 1/2 volt battery connected as in oscillator alignment.
Check the response curve on all channels. If the response curve appears off approximately the same amount on all channels recheck the video IF response before attempting RF alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
23.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	69MC (10MC SWP)	67.25MC 71.75MC	4	Vert. Amp. to test point "S". Low side to chassis.	A50, A51, A52	Adjust for maximum amplitude and symmetry as per Fig 5.
24.	"	"	195MC (10MC SWP)	193.25MC 197.75MC	10	"	A53	Adjust for maximum amplitude and symmetry as per Fig 5. The mixer plate coil (A9) will have to be retuned when the cover is removed and again retuned when the cover is replaced. Check all channels and adjust the antenna coil adjustments if necessary. These adjustments are reached through a hole in the rear of the tuner.

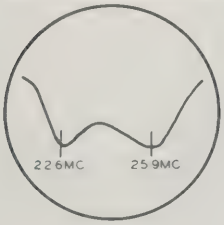


FIG.1

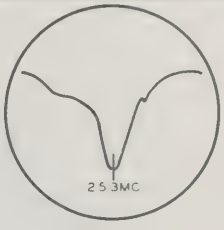


FIG.2

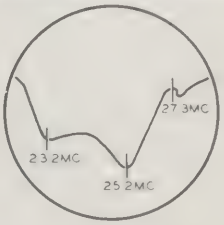


FIG.3

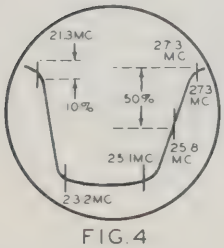


FIG.4

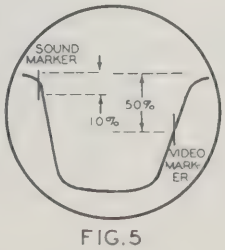


FIG.5

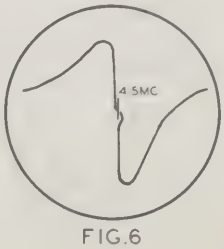


FIG.6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.3VDC	.5VDC	6.3VAC	0V.	215VDC	150VDC	.5VDC		
V 2	6AG5	-.3VDC	2.5VDC	6.3VAC	0V.	230VDC	105VDC	2.5VDC		
V 3	6J6	♦170VDC	§-5VDC	6.3VAC	0V.	¶§-2.8VDC	♦§-5VDC	0V.		
V 4	6AU6	0V.	0V.	6.3VAC	0V.	225VDC	135VDC	.8VDC		
V 5	6AU6	0V.	0V.	6.3VAC	0V.	180VDC	135VDC	.8VDC		
V 6	6AH6	0V.	0V.	6.3VAC	0V.	130VDC	130VDC	1.3VDC		
V 7	12AT7	-.8VDC	-.8VDC	0V.	0V.	0V.	-3.8VDC	0V.	4.3VDC .4VDC	6.3VAC
V 8	12AT7	120VDC	-.6VDC	0V.	0V.	0V.	135VDC	0V.	.7VDC	6.3VAC
V 9	6V6GT	0V.	0V.	155VDC	40VDC	-.4VDC	0V.	6.3VAC	0V.	
V 10	6BN6	4.3VDC .4VDC	0V.	0V.	6.3VAC	83VDC	0V.	110VDC		
V 11	6AG7	0V.	0V.	0V.	0V.	3.2VDC	170VDC	6.3VAC	240VDC	
V 12	6SN7GT	-.2VDC	130VDC	5.5VDC	.4VDC	138VDC	10VDC	0V.	6.3VAC	
V 13	12AT7	170VDC	-.6VDC	0V.	6.3VAC	6.3VAC	75VDC	-1.3VDC	0V.	0V.
V 14	6SN7GT	-25VDC	175VDC	0V.	-17VDC	50VDC	0V.	0V.	6.3VAC	
V 15	6V6GT	0V.	0V.	260VDC	260VDC	0V.	0V.	6.3VAC	20VDC 35VDC	
V 16	6AL5	-2.4VDC	-8.4VDC	0V.	6.3VAC	-1.6VDC	0V.	-7.6VDC		
V 17	6AC7	0V.	0V.	0V.	-1VDC	0V.	90VDC	6.3VAC	215VDC	
V 18	6K6GT	0V.	0V.	145VDC	150VDC	-13VDC	225VDC	6.3VAC	.3VDC	
V 19	6BG6G	0V.	6.3VAC	12VDC	6.3VAC	.2VDC	.2VDC	0V.	260VDC	TOP CAP *
V 20	6W4GT	0V.	490VDC	490VDC	0V.	400VDC	400VDC	6.3VAC	0V.	
V 21	1B3GT		* DO NOT MEASURE.							
V 22	5U4G	0V.	420VDC	0V.	395VAC	0V.	395VAC	0V.	420VDC	
V 23	5Y3GT	0V.	265VDC	0V.	295VAC	0V.	295VAC	0V.	265VDC	
V 24	12UP4A	■255VDC	155VDC	PIN 10 400VDC	PIN 11 255VDC	PIN 12 ■255VDC				

NOTE: ALL MEASUREMENTS TAKEN WITH PICTURE SIZE SWITCH IN "NORMAL" POSITION.

♦ MEASURED IN CHANNEL 4 POSITION.
¶ MEASURED IN CHANNEL 10 POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.
■ 6.3VAC MEASURED ACROSS FILAMENTS.

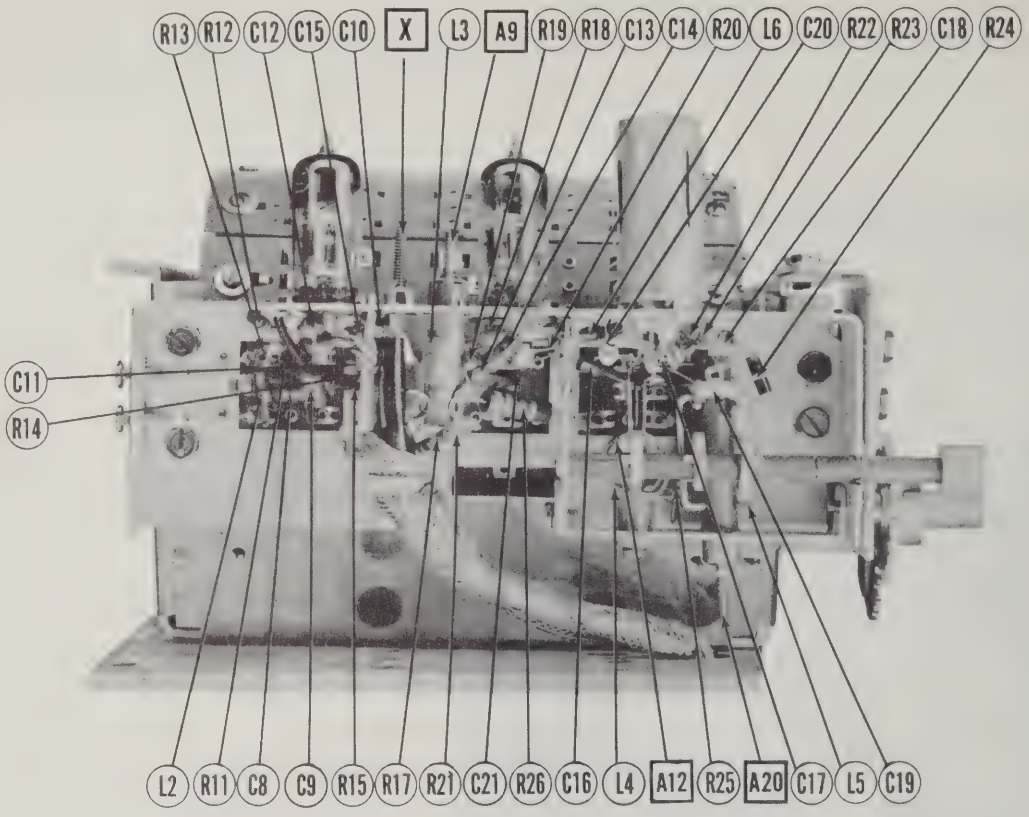
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	3.5Meg.	47Ω	.1Ω	0Ω	†1.4KΩ	†22KΩ	47Ω		
V 2	6AG5	4.5Meg.	820Ω	.1Ω	0Ω	†1.5KΩ	†150KΩ	820Ω		
V 3	6J6	♦†5KΩ	¶†10KΩ	.1Ω	0Ω	1500Ω	47KΩ	0Ω		
V 4	6AU6	2 Meg.	0Ω	.1Ω	0Ω	†800Ω	†2.5KΩ	82Ω		
V 5	6AU6	2 Meg.	0Ω	.1Ω	0Ω	†8KΩ	†2.5KΩ	82Ω		
V 6	6AH6	.2Ω	0Ω	.1Ω	0Ω	†3KΩ	†3KΩ	150Ω		
V 7	12AT7	3.9KΩ	3.9KΩ	.2Ω	0Ω	0Ω	†1.7Meg.	39KΩ	900Ω	.1Ω
V 8	12AT7	†12KΩ	1.5 Meg.	0Ω	0Ω	0Ω	†2.5KΩ	47KΩ	100Ω	.1Ω
V 9	6V6GT	0Ω	0Ω	†7KΩ	†20KΩ	470KΩ	Inf.	.1Ω	0Ω	
V 10	6BN6	500Ω 100Ω	3Ω	0Ω	.1Ω	#18KΩ	4.5Ω	#230KΩ		
V 11	6AG7	0Ω	0Ω	0Ω	180Ω	82Ω	#9KΩ	.1Ω	#3.5KΩ	
V 12	6SN7GT	2.2 Meg.	†470KΩ	440Ω	2.2 Meg.	†15KΩ	2KΩ	.1Ω	0Ω	
V 13	12AT7	†6KΩ	1 Meg.	0Ω	.1Ω	.1Ω	†9KΩ	2.2Meg.	0Ω	0Ω
V 14	6SN7GT	2.8 Meg.	#4 Meg. #300KΩ	0Ω	220KΩ	#560KΩ	0Ω	0Ω	.1Ω	
V 15	6V6GT	0Ω	0Ω	#10.5KΩ	#10.5KΩ	1.5 Meg.	Inf.	.1Ω	6.5KΩ 1.5KΩ	
V 16	6AL5	2KΩ	470KΩ	0Ω	.1Ω	1 Meg.	0Ω	470KΩ		
V 17	6AC7	0Ω	0Ω	0Ω	1.5 Meg.	10Ω	†25KΩ	.1Ω	†22KΩ	
V 18	6K6GT	Inf.	0Ω	†5KΩ	†10KΩ	80KΩ	†360Ω	.1Ω	15Ω	
V 19	6BG6G	Inf.	.1Ω	150Ω	.1Ω	470KΩ	470KΩ	0Ω	#10KΩ	TOP CAP #15KΩ
V 20	6W4GT	Inf.	#15KΩ	#15KΩ	Inf.	#200Ω	#200Ω	.1Ω	0Ω	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #15KΩ
V 22	5U4G	Inf.	130KΩ	Inf.	34Ω	Inf.	36Ω	Inf.	130KΩ	
V 23	5Y3GT	Inf.	10KΩ	Inf.	30Ω	Inf.	28Ω	Inf.	10KΩ	
V 24	12UP4A	90KΩ	†7KΩ	PIN 10 #180Ω	PIN 11 90KΩ	PIN 12 90KΩ				

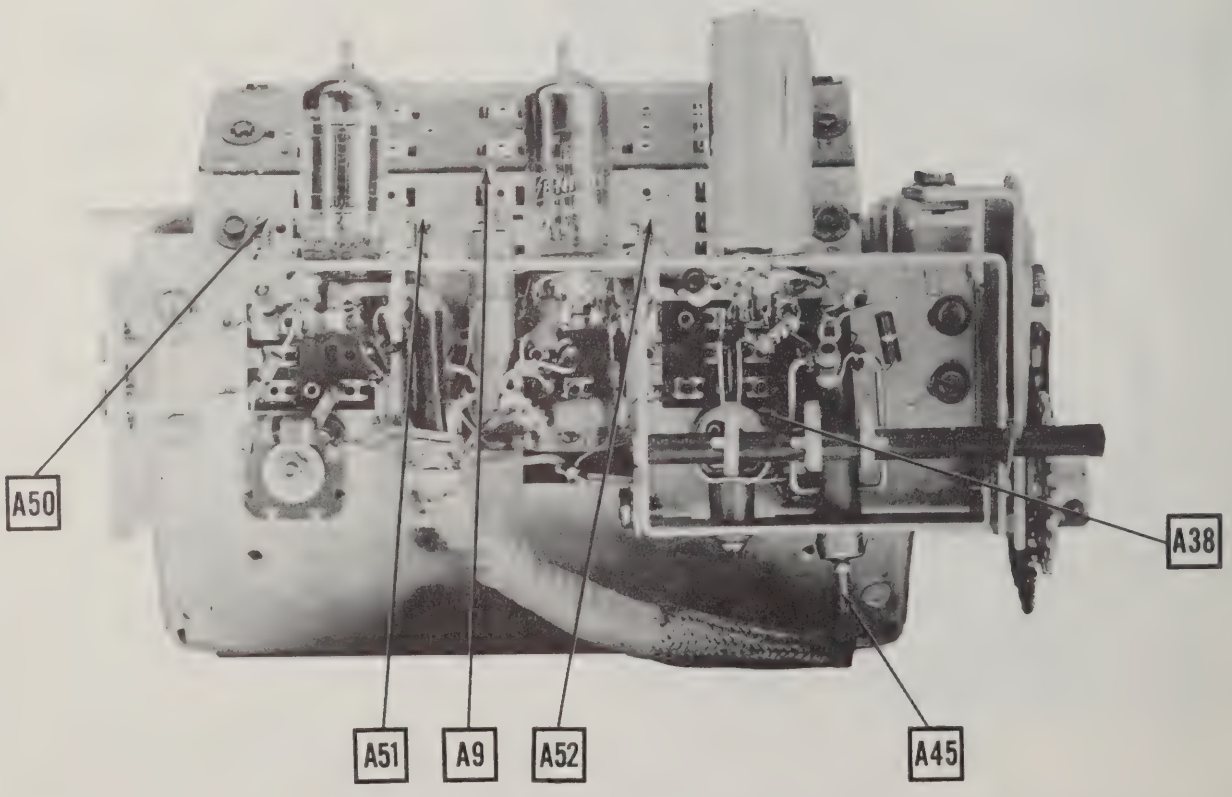
NOTE: ALL MEASUREMENTS TAKEN WITH PICTURE SIZE SWITCH IN "NORMAL" POSITION.

† MEASURED FROM PIN 8 OF V23.
# MEASURED FROM PIN 8 OF V22.
♦ MEASURED IN CHANNEL 4 POSITION.
¶ MEASURED IN CHANNEL 10 POSITION.

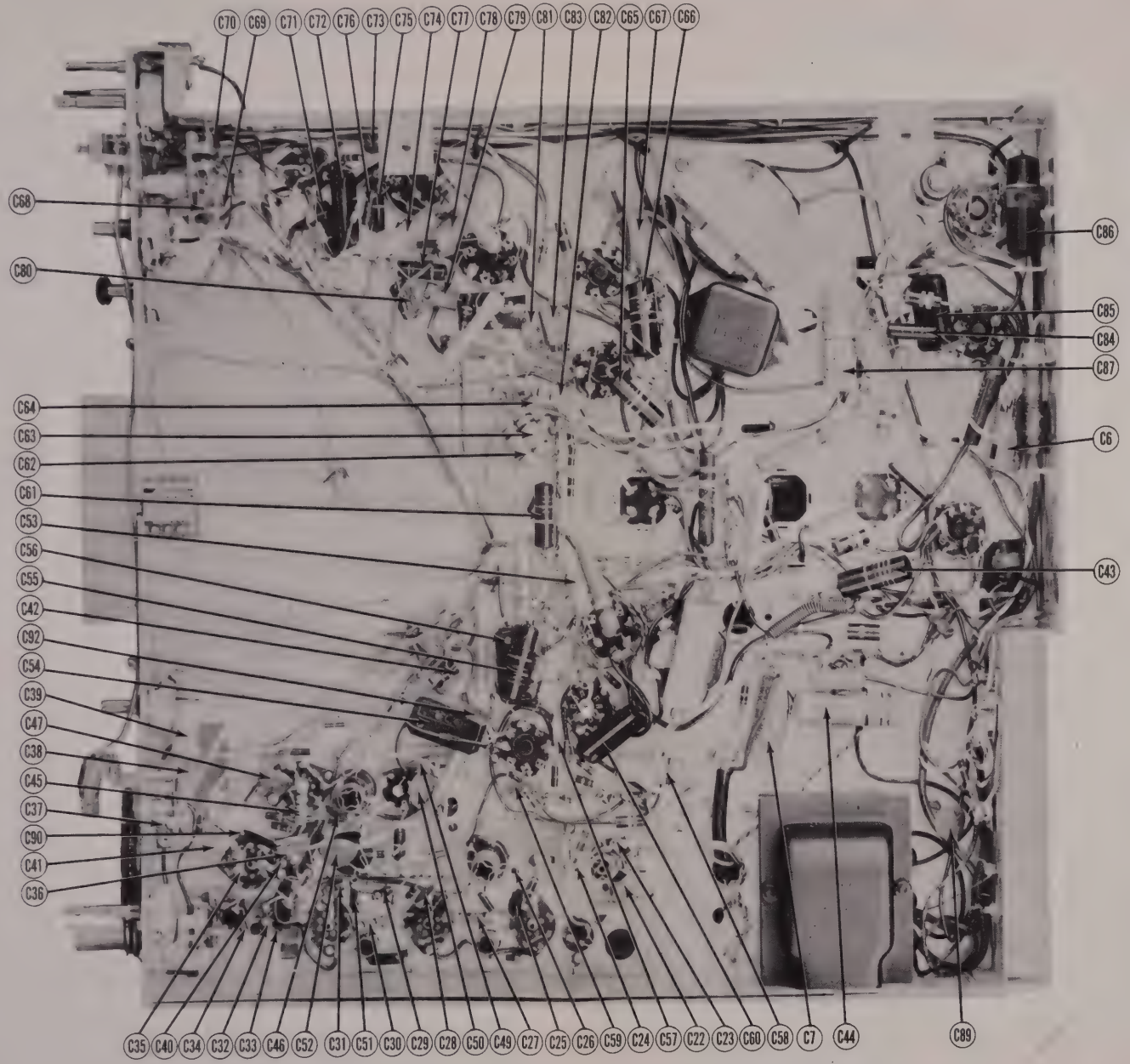
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panel controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



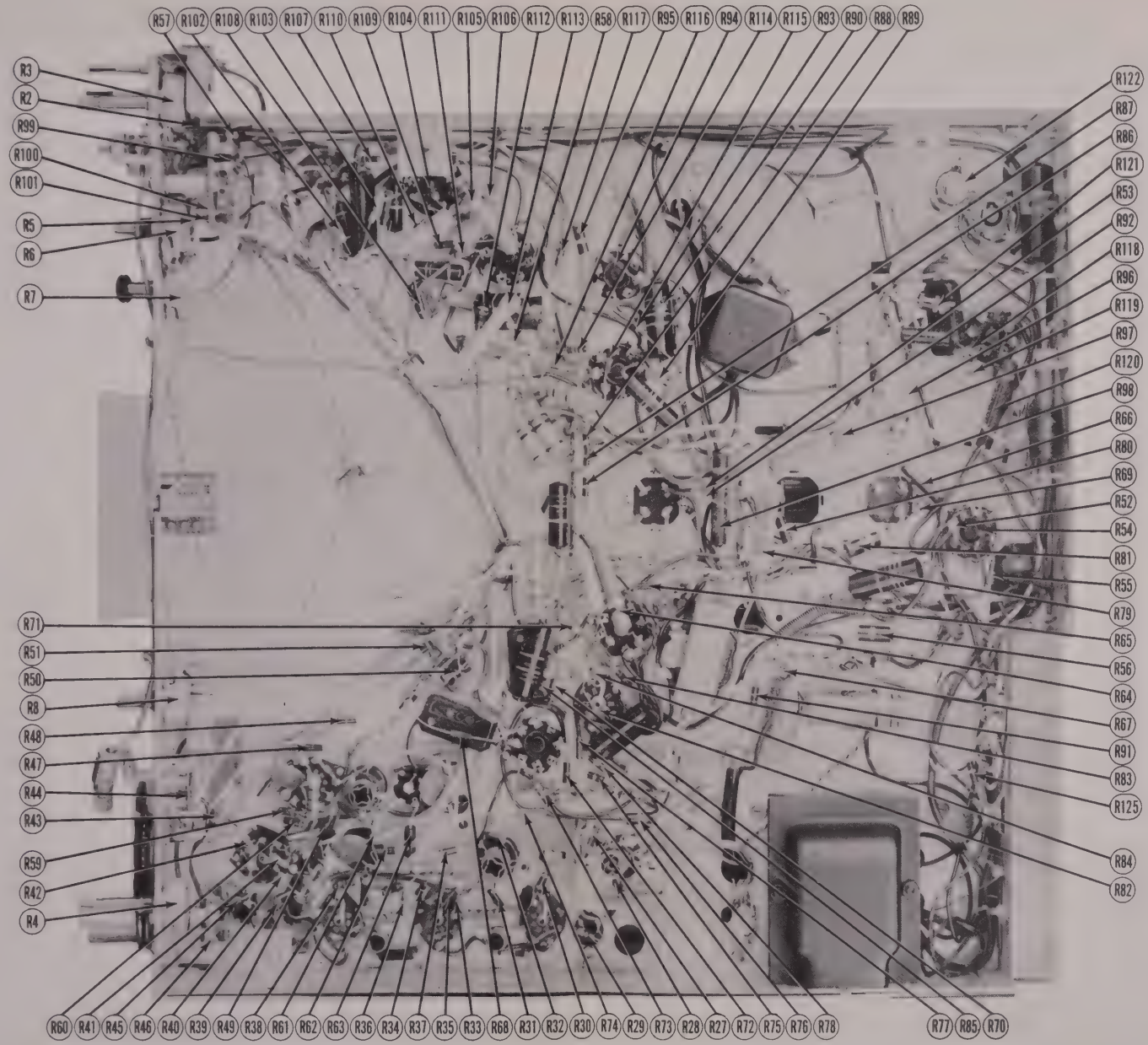
RF TUNER



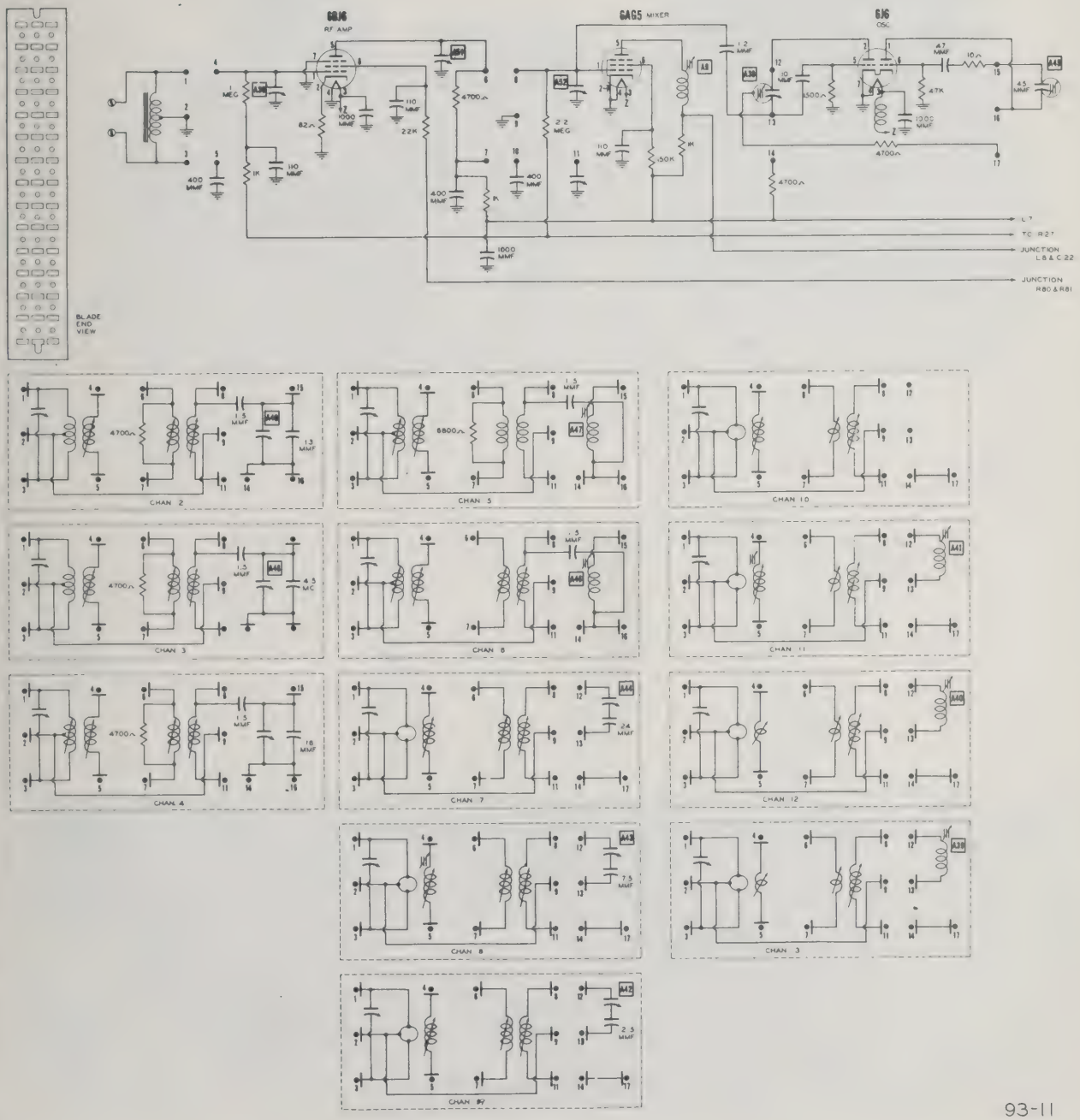
RF TUNER



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

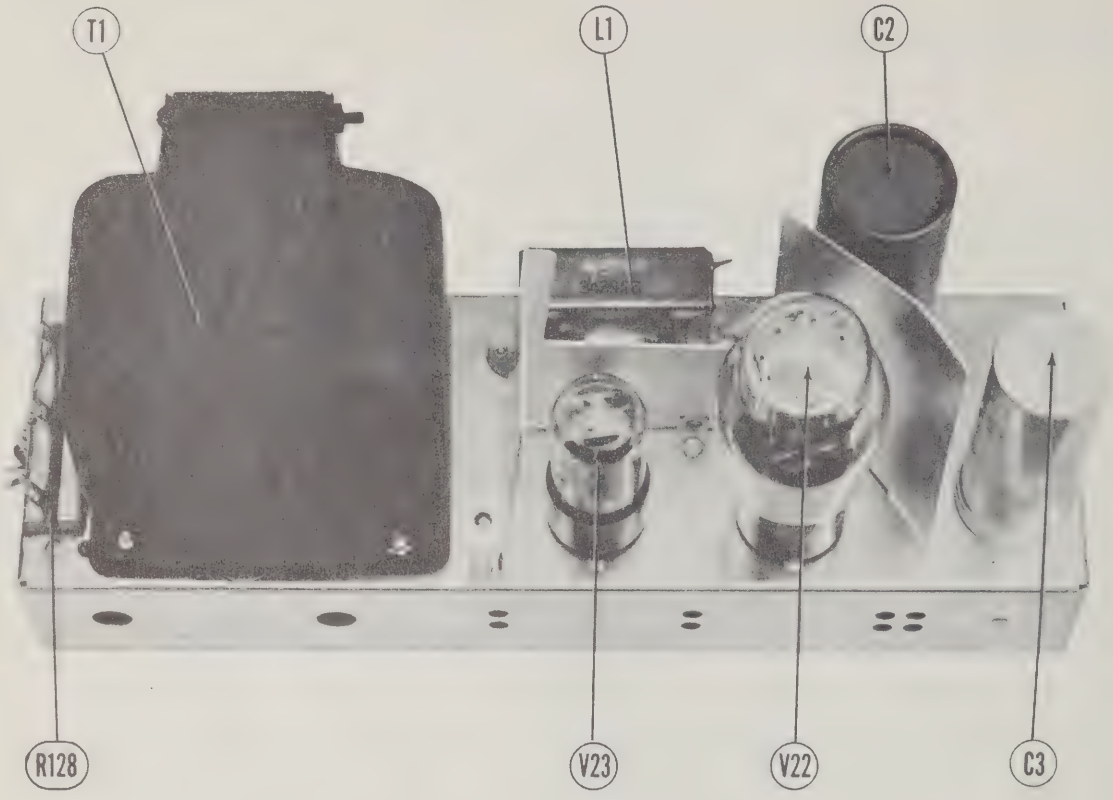


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

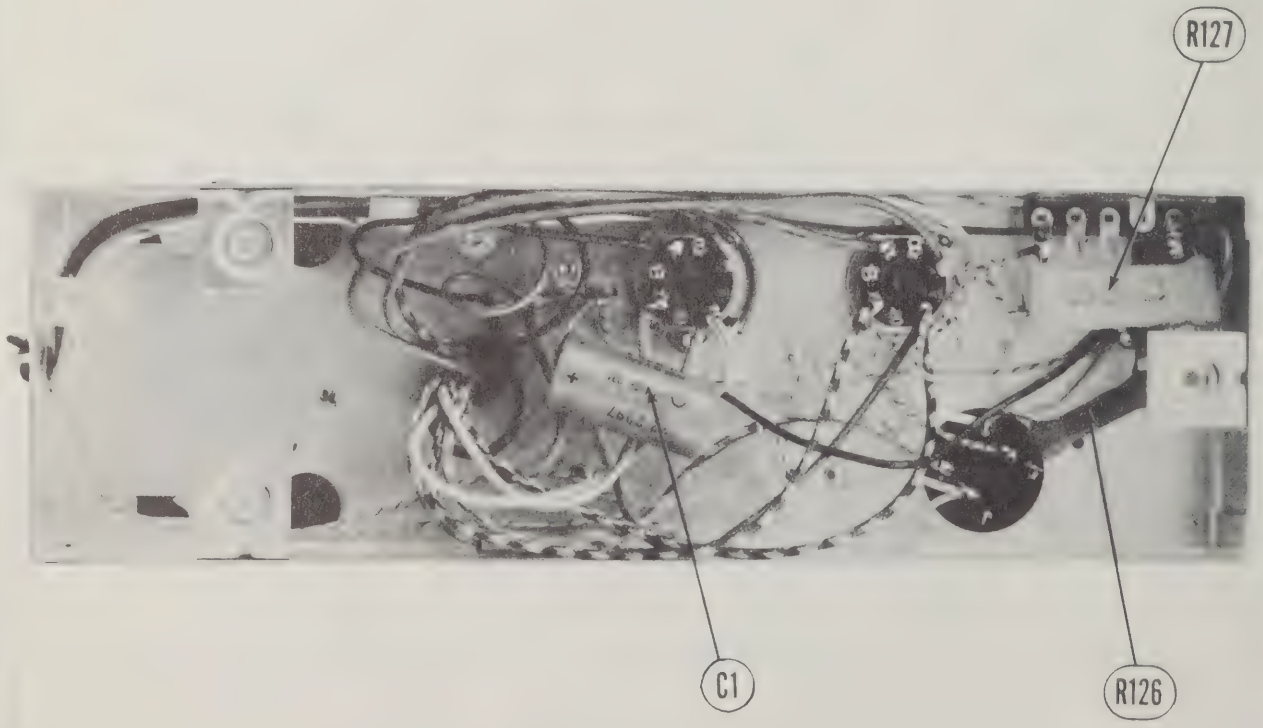


93-11

SCHEMATIC-TUNER NO. S-15940



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	7BD	
B	RF Amp.	6BJ6	6BJ6	7CM	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6AU6	6AU6	7BK	
V5	2nd Video IF	6AU6	6AU6	7BK	
V6	3rd Video IF	6AH6	6AH6	7BK	
V7	Video Det.-AGC Rectifier	12AT7	12AT7	9A	
V8	Video Amp.-Sound IF Amp.	12AT7	12AT7	9A	
V9	Video Output	6V6GT	6V6GT	7AC	
V10	Limiter-Det.	6BN6	6BN6	7DF	
V11	Audio Output	6AG7	6AG7	8Y	
V12	1st Sync. Clipper -Sync. Amp.	6SN7GT	6SN7GT	8BD	
V13	2nd Sync. Clipper -Sync. Sep.	12AT7	12AT7	9A	
V14	Vert. Osc.-Hor. Disch.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6V6GT	6V6GT	7AC	
V16	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V17	Hor. AFC	6AC7	6AC7	8N	
V18	Hor. Osc.	6K6GT	6K6GT	7S	
V19	Hor. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V23	LV Rectifier	5Y3GT	5Y3GT	5T	
V24	Picture Tube	12UP4A	12UP4A		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	16	350	22-2097	PRS350/16			TVA-22	Filter
C2A	80	400	22-2096	AF1681			TVL-201	▲ Filter
B	40	400					†	▲ Filter
C3A	20	475	22-2102	AF44X121			TVL-306	▲ Filter
B	20	475						■ Filter
C	60	400						▲ Filter
C4A	100	300	22-2101	AF20G8B164A			TVL-402	▲ Decoupling
B	40	50						■ Vert. Output Cath. Bypass
C	80	25						▲ Output Cathode Bypass
D	20	25						1st Sync. Clipper Cath. Bypass
C5A	20	475	22-2095	AF442X2G			TVL-403	▲ Decoupling
B	20	475						■ Vert. Output Decoupling
C	10	475						▲ Vert. Osc. Decoupling
D	10	300						V. Amp. Screen Bypass
C6	20	25	22-745	PRS25/25			TVA-6	Hor. Output Cathode Bypass
C7	20	25	22-745	PRS25/25			TVA-6	Bias Filter
C8	200			GP200K	D6-201	GP2K-200		AGC Filter
C9	200			GP200K	D6-201	GP2K-200		Fixed Padder
C10	200			GP200K	D6-201	GP2K-200		RF Screen Bypass
C11	200			GP200K	D6-201	GP2K-200		RF Decoupling
C12	1000		22-1888	GP1000M	D6-102	GP2L-001		RF Filament Bypass
C13	200			GP200K	D6-201	GP2K-200		Mixer Screen Bypass
C14	1000		22-1888	GP1000M	D6-102	GP2L-001		RF Bypass
C15	200			GP200K	D6-201	GP2K-200		Fixed Padder
C16	1.2		22-1765					Osc. Coupling
C17	10		22-1895	CN10DN030		N030K-10		Osc. Grid Cap.
C18	47		22-1876	CN47JN080		N080K-47		Osc. Grid Cap.
C19	46		22-2065	CN46JN030		N030K-46		Fixed Trimmer
C20	100		22-1947	GP100M	D6-101	GP1K-100		Osc. Filament Bypass
C21	200			GP200M	D6-201	GP2K-200		Mixer Cathode Bypass *
C22	100	500	22-1669	1468-0001	D8-101	GP1K-100	1FM-31	IF Coupling
C23	10		22-1895	CN10DN030		N030K-10		Fixed Trimmer
C24	6		22-1869	CN6CN080		N080K-6		Fixed Trimmer
C25A	1500		105-17	GP1500M	D6-152	GP2L-0015	29C6	1st IF Screen Bypass
B	1500			GP1500M	D6-152	GP2L-0015		1st IF Plate Decoupling
C26	30		22-1871	CN30JN080		N080K-30	MS-43	Fixed Trimmer
C27	200		22-1668	GP200M	D6-201	GP2K-200	1FM-32	IF Coupling
C28A	1500		105-17	GP1500M	D6-152	GP2L-0015	29C6	AGC Filter
B	1500			GP1500M	D6-152	GP2L-0015		2nd V. IF Screen Bypass
C29	1000		22-1888	GP1000M	D6-102	GP2L-001	1FM-21	2nd V. IF Plate Decoupling
C30	200		22-1668	GP200M	D6-201	GP2K-200	1FM-32	IF Coupling
C31	1000		22-1888	GP1000M	D6-102	GP2L-001	1FM-21	3rd V. IF Cathode Bypass
C32	500		22-1700	GP500M	D6-501	GP2K-500	1FM-35	3rd V. IF Decoupling
C33	5		22-2050	GP5K	D2-4.7	NPOK-5	MS-55	IF Coupling
C34	5		22-2050	GP5K	D2-4.7	NPOK-5	MS-55	IF Coupling
C35	200		22-1866	GP200M	D6-201	GP2K-200	1FM-32	IF Coupling
C36	200		22-1866	GP200M	D6-201	GP2K-200	1FM-32	DAGC Decoupling
C37	50		22-1137	GP50M	D6-500	GP1K-50	1FM-45	AGC Filter
C38	10000		22-3	BPD-10	D6-103	821-01	36C1	AGC Filter
C39	.1	200	22-1777	P288-1			TM-1	AGC Filter
C40	7.5		22-2094	GP10K	D2-10	NPOK-8.2	MS-41	V. Diode Filter
C41	.047	400	22-1775	P488-047			TM-15	Video Coupling
C42	100	500	22-162	1468-0001	D6-101	GP1K-100	1FM-31	Peaking
C43	.047	600	22-1844	P688-047			TM-15	Video Coupling
C44	.1	600	22-1841	P688-1			TM-1	Pic. Tube Cathode Decoupling
C45	500		22-1700	GP500M	D6-501	GP2K-500	1FM-35	S. IF Coupling
C46	10000		22-3	BPD-10	D6-103	821-01	36C1	S. IF Coupling
C47	10000		22-3	BPD-10	D6-103	821-01	36C1	S. IF Cathode Bypass
C48	10		22-2106	CN10DN150		N150K-10	MS-41	Fixed Trimmer
C49	10000		22-3	BPD-10	D6-103	821-01	36C1	Limiter & Det. Cath. Bypass
C50	10000		22-3	BPD-10	D6-103	821-01	36C1	Accelerator Anode Bypass
C51	1000		22-1886	GP1000M	D6-102	GP2L-001	1FM-21	De-emphasis

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA ZENITH PART No	AEROVOX PART No.	CENTRALAB PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52	10000		22-3	BPD-10	D6-103	821-01	36C1	Audio Coupling
C53	.0047	600	22-1849	P688-0047	D6-472	811-005	TM-25	Output Plate Bypass
C54	.05	600	22-1844	P688-05			TM-15	Sync. Coupling
C55	1	400	22-2061	P488-1			TM-1	Differentiator Net.
C56	.05	400	22-1775	P488-05			TM-15	Sync. Coupling
C57	100	500	22-162	1468-0001	D6-102	GP1K-100	1FM-31	1st Sync. Plate Bypass
C58	.047	600	22-1844	P688-047			TM-15	1st Sync. Plate Decoupling
C59	220	500	22-182	1468-00025	D6-221	GP2K-220	1FM-325	Sync. Coupling
C60	.02	600	22-1813	P688-02			TM-12	Sync. Coupling
C61	.01	600	22-1779	P688-01	D6-103	821-01	TM-11	Vert. Sync. Coupling
C62	.0047	200	22-1842	P688-0047	D6-472	GP2M-0047	TM-25	Integrator Net.
C63	.0047	200	22-1842	P688-0047	D6-472	GP2M-0047	TM-25	Integrator Net.
C64	.0047	200	22-1842	P688-0047	D6-472	GP2M-0047	TM-25	Integrator Net.
C65	.01	600	22-1843	P688-01	D6-103	821-01	TM-11	Vert. Osc. Grid Cap.
C66	.047	600	22-2078	P688-047			TM-15	Vert. Discharge
C67	1	600	22-1841	P688-1			TM-1	Vert. Sweep Coupling
C68	150	500	22-1137	1468-00015	D6-151	GP2K-150	1FM-315	Differentiator Net.
C69	470	500	22-1138	1468-0005	D6-471	GP2K-470	1FM-35	Hor. Sync. Coupling
C70	.015	200	22-1831	P288-015				Fixed Trimmer
C71	.0047	400	22-1847	P688-0047	D6-472	GP2M-0047	TM-25	AFC Filter
C72	.05	200	22-1778	P288-05			TM-15	AFC Filter
C73	10000		22-3	BPD-10	D6-103	821-01	36C1	Hor. AFC Screen Bypass
C74	.0047	600	22-1849	P688-0047	D6-472	GP2M-0047	TM-25	Hor. AFC Coupling
C75	.015	200	22-2081	P288-015				Phase Shifter
C76	1000		22-2112	1468-001	D6-102	GP2L-001	1FM-21	Phase Shifter
C77	.0047	400	22-1847	P688-0047	D6-472	GP2M-0047	TM-25	Hor. Osc. Grid Cap.
C78	.047	600	22-1844	P688-047			TM-15	Hor. Osc. Screen Bypass
C79	150	500	22-1137	1468-00015	D6-151	GP2K-150	1FM-315	Hor. Sweep Coupling
C80	.001	200	22-1839	P688-001	D6-102	GP2L-001	TM-21	Hor. Sweep Coupling
C81	150	500	22-1137	1468-00015	D6-151	GP2K-150	1FM-315	Differentiator Net.
C82	.01	400	22-1846	P488-01	D6-103	821-01	TM-11	Hor. Sweep Coupling
C83	680	500	22-2034		D6-681	GP2K-680	MS-37	Hor. Discharge
C84	.001	1000	22-1851	P1088-001			TM-21	Hor. Sweep Coupling
C85	.05	600	22-1844	P688-05			TM-15	Hor. Output Screen Bypass
C86	.22	200	22-2145	P488-22			TC-2	Damper Filter
C87	.47	200	22-2098	P288-47			TC-5	Hor. Sweep Coupling
C88	500	15000	22-1832					HV Filter
C89	10000		22-3	BPD-10	D6-103	821-01	36C1	Line Filter
C90	1000		22-1851	GP1000M	D6-102	GP2L-001	1FM-21	V. Det.-AGC Fil. Bypass
C91	47		22-1876	CN47JNPO	D2-47	NPOM-50	MS-45	Fixed Trimmer
C92	4000		22-4	GP4000M	D6-472	811-005	29C1	RF Bypass *
C93	1000		22-3	GP1000M	D6-102	GP2L-001		RF Cathode Bypass

* Not used in all models.
† Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2052	Q13-133	AM-60-Z	BSK-60-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	#	Attach to R1A per instructions
R2A	120KΩ	½	63-2061	Q11-128	AM-49-S		Brightness control
B	Shaft		Not Req.	Not Req.	KSS-3		Attach to R2A per instructions
R3A	500Ω	½	63-2051		AM-20-U		Contrast control
B	Shaft		Not Req.		KSS-3		Attach to R3A per instructions
R4A	2 Meg.	½	63-2058	Q11-139	AM-83-S		Vert. hold control
B	Shaft		Not Req.	Not Req.	KSS-3		Attach to R4A per instructions
R5A	25KΩ	½	63-1675	Q11-120			Horiz. drive control
B	Shaft		Not Req.	SQ			Attach to R5A per instructions
R6A	5000Ω	½	63-1674	Q11-114	AM-19-S		Vert. linearity control
B	Shaft		Not Req.	SQ	KSS-3 *		Attach to R6A per instructions
R7	3.5 Meg.	½	63-2036				Height control
R8A	50KΩ	½	63-2053	Q11-123	AM-44-S	N-227	Horiz. hold control
B	Shaft		Not Req.	SQ	KSS-3 *	K-185 *	Attach to R8A per instructions
R9	350Ω to 4000Ω	1	63-2054				AGC delay control-Wire Wound
R10	100Ω to 500Ω	1	63-2050				Bias control-Wire Wound

Switch is attached at factory.
* File slot in shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R11	1 Meg.	½	63-1912		RF Grid
R12	47Ω	½			RF Cathode-See Note 1
R13	10Ω	½	63-1701		Parasitic Supp.-See Note 2
R14	10Ω	½	63-1701		Parasitic Supp.-See Note 2
R15	22KΩ	½		BTS-22K	RF Screen
R16	1000Ω	½	63-1785	BTS-1000	AGC Network-See Note 2
R17	1000Ω	½	63-1785	BTS-1000	RF Decoupling
R18	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	Mixer Grid
R19	150KΩ	½	63-1876	BTS-150K	Mixer Screen
R20	820Ω	½		BTS-820	Mixer Cathode
R21	1000Ω	½	63-1785	BTS-1000	Mixer Plate Decoupling
R22	1500Ω	½	63-1792	BTS-1500	Osc. Grid
R23	47KΩ	½	63-1855	BTS-47K	Osc. Grid
R24	10Ω	½	63-1701		Parasitic Supp.
R25	4700Ω	1	63-943		Osc. Plate
R26	4700Ω	1	63-943		Osc. Plate
R27	330KΩ	½	63-1890	BTS-330K	AGC Network
R28	1000Ω	½	63-1786	BTS-1000	AGC Network
R29	6200Ω 5%	½	63-1818		1st Video IF Coil Shunt
R30	82Ω	½	63-1740		1st Video IF Cathode
R31	220Ω 20%	½			1st Video IF Screen Decoupling
R32	470Ω 20%	½	63-1772	BTS-470	1st Video IF Plate Decoupling

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R33	8200Ω 5%	½	63-1823		2nd Video IF Grid
R34	82Ω	½	63-1740		2nd Video IF Cathode
R35	220Ω 20%	½			2nd Video IF Screen Decoupling
R36	5600Ω 5%	½	63-1816	BTS-5600- 5%	2nd Video IF Plate
R37	470Ω 20%	½	63-1772	BTS-470	2nd Video IF Plate Decoupling
R38	150Ω 20%	½	63-1751		3rd Video IF Cathode
R39	470Ω 20%	½	63-1772	BTS-470	3rd Video IF Decoupling
R40	120KΩ	½	63-1873	BTS-120K	Voltage Divider
R41	39KΩ	½	63-1852	BTS-39K	AGC Amp. Grid
R42	1000Ω 20%	½	63-1786	BTS-1000	AGC Amp. Plate
R43	220KΩ 20%	½	63-1884	BTS-220K	AGC Network
R44	220KΩ 20%	½	63-1884	BTS-220K	AGC Network
R45	33KΩ	½	63-1846	BTS-33K	Peaking Coil Shunt
R46	3900Ω 5%	½	63-1809	BTS-3900-5%	Video Det. Load
R47	2.2 Meg. 20%	½	63-1926	BTS-2.2 Meg.	Video Amp. Grid
R48	2.2 Meg. 20%	½	63-1926	BTS-2.2 Meg.	Bias Network
R49	100Ω 20%	½	63-1744		Parasitic Supp.
R50	4700Ω	½	63-1813	BTS-4700	Video Amp. Plate
R51	3900Ω	½	63-1810	BTS-3900	Video Amp. Plate
R52	470KΩ 20%	½	63-1898	BTS-470K	Video Output Grid
R53	39KΩ	½	63-1852	BTS-39K	Video Output Screen
R54	22KΩ	½	63-1841	BTS-22K	Voltage Divider
R55	68KΩ	½	63-1862	BTS-68K	Peaking Coil Shunt
R56	6200Ω 5%	2	63-1579		Picture Tube Grid
R57	82KΩ	½	63-1866	BTS-82K	Voltage Divider
R58	120KΩ	½	63-1873	BTS-120K	Voltage Divider
R59	100Ω	½	63-1743		Sound IF Cathode
R60	47KΩ	½	63-1855		Sound IF Grid
R61	680Ω	½	63-1778	BTS-680	Isolation
R62	220KΩ 20%	½	63-1884	BTS-220K	Limiter Plate
R63	10KΩ	1	63-1071	BTA-10K	Limiter Screen
R64	5600Ω	2	63-1193	BT-2-5600	Decoupling
R65	150Ω	½	63-1775		Parasitic Supp.
R66	82Ω	½	63-975	BW-½-82	Output Cathode-Wire Wound
R67	3300Ω	½	63-1806	BTS-3300	Bias Network
R68	2.2 Meg.	½	63-1926	BTS-2.2 Meg.	1st Sync. Clipper Grid
R69	470Ω	½	63-1771	BTS-470	1st Sync. Clipper Cathode
R70	470KΩ	½	63-1897	BTS-470K	1st Sync. Clipper Plate
R71	10KΩ	½	63-1827	BTS-10K	Differentiator
R72	2.2 Meg. 20%	½	63-1926	BTS-2.2 Meg.	Sync. Amp. Grid
R73	470Ω	½	63-1771	BTS-470	Sync. Amp. Cathode
R74	1500Ω	½	63-1792	BTS-1500	Sync. Amp. Cathode
R75	4700Ω	½	63-1813	BTS-4700	Sync. Amp. Plate
R76	10KΩ	1	63-1071	BTA-10K	Sync. Amp. Plate Decoupling
R77	2.2 Meg. 20%	½	63-1926	BTS-2.2 Meg.	2nd Sync. Clipper Grid
R78	12KΩ	½	63-1831	BTS-12K	2nd Sync. Clipper Plate
R79	2000Ω	5	63-1530	AB-2000	Decoupling-Wire Wound
R80	1200Ω	1	63-1976	BTA-1200	Decoupling
R81	10KΩ	2	63-1196	BT-2-10K	Voltage Divider
R82	15KΩ	½	63-1834	BTS-15K	Voltage Divider
R83	1 Meg. 20%	½	63-1912	BTS-1 Meg.	Sync. Sep. Grid
R84	3300Ω	1	63-1974	BTA-3300	Sync. Sep. Plate
R85	3300Ω	1	63-1974	BTA-3300	Sync. Sep. Plate
R86	8200Ω	½	63-1824	BTS-8200	Integrator
R87	8200Ω	½	63-1824	BTS-8200	Integrator
R88	8200Ω	½	63-1824	BTS-8200	Integrator
R89	820KΩ	½	63-1908	BTS-820K	Vert. Osc. Grid
R90	220KΩ	½	63-1883	BTS-220K	Vert. Osc. Plate
R91	6800Ω	½	63-1820	BTS-6800	Bias Network
R92	47KΩ 20%	½	63-1856	BTS-47K	Filter
R93	8200Ω	½	63-1824	BTS-8200	Vert. Peaking
R94	1.5 Meg. 20%	½	63-1919	BTS-1.5 Meg.	Vert. Output Grid
R95	1500Ω	1	63-1967	BTA-1500	Vert. Output Cathode
R96	1800Ω	2	63-1620	BT-2-1800	Vert. Output Plate
R97	5600Ω	2	63-1193	BT-2-5600	Vert. Output Decoupling
R98	2700Ω	2	63-1169	BW-2-2700	Vert. Output Decoupling-Wire Wound
R99	6800Ω	½	63-1820	BTS-6800	Differentiator
R100	470KΩ 5%	½	63-1896	BTS-470K-5%	Horiz. Sync. Disc. Load
R101	470KΩ 5%	½	63-1896	BTS-470K-5%	Horiz. Sync. Disc. Load
R102	470KΩ 20%	½	63-1898	BTS-470K	Horiz. AFC Filter Network
R103	560Ω	½	63-1775	BTS-560	Horiz. AFC Grid
R104	10Ω	½	63-1701		Horiz. AFC Cathode
R105	22KΩ	2	63-1566	BT-2-22K	Horiz. AFC Plate
R106	39KΩ	½	63-1852	BTS-39K	Horiz. AFC Screen
R107	56KΩ	½	63-1859	BTS-56K	Voltage Divider
R108	1.5 Meg. 5%	½	63-1919	BTS-1.5 Meg. 5%	Voltage Divider
R109	1 Meg. 20%	½	63-1912	BTS-1 Meg.	Voltage Divider
R110	18KΩ	½	63-1838	BTS-18K	Voltage Divider
R111	27KΩ	½	63-1845	BTS-27K	Horiz. Osc. Grid
R112	10KΩ	1	63-1071	BTA-10K	Horiz. Osc. Screen
R113	5000Ω	5	63-1533	AB-5000	Horiz. Osc. Plate
R114	18KΩ	½	63-1838	BTS-18K	Differentiator
R115	220KΩ 20%	½	63-1884	BTS-220K	Horiz. Discharge Grid
R116	560KΩ	½	63-1901	BTS-560K	Horiz. Discharge Plate
R117	8200Ω	½	63-1824	BTS-8200	Horiz. Peaking
R118	150Ω 20%	½	63-1751		Parasitic Supp.
R119	470KΩ	½	63-1897	BTS-470K	Horiz. Output Grid
R120	150Ω 20%	2	63-1578	BW-2-150	Horiz. Output Cathode-Wire Wound
R121	10KΩ	2	63-1198	BT-2-10K	Horiz. Output Screen
R122	15KΩ	20	63-1679	DG-15,000	Damper Filter-Wire Wound
R123	4.7Ω	½	63-1581		HV Rect. Filament-Wire Wound
R124	470KΩ 20%	½	63-1898		HV Filter
R125	220KΩ 20%	½	63-1884	BTS-220K	Line Filter-See Note 3
R126	12Ω	5	63-2055	AB-12	Bias Network-Wire Wound
R127	3500Ω	10	63-2023	AB-3500	Filter-Wire Wound
R128A	180Ω	5	63-2056 or		Filter-Wire Wound
B	180Ω	5	63-2057		Filter-Wire Wound

Note 1. Some models use 82Ω resistor in this application.
Note 2. Not used in all models.
Note 3. Some models use two resistors in series to obtain required resistance and wattage.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC	790VCT	5VAC @ 3A	5VAC @ 2A	95-1168 ①		P-3169	
	Tap @ 107VAC @ 1.6A	.145ADC & 600VCT .133ADC						
B					95-1169 ②			

① Used in table models.
② Used in console models.

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	117VAC @ .60A	6.3VAC @ 9.5A	6.3VAC @ .6A		95-1171			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	DC RESISTANCE SEC.	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	55Ω	190Ω	95-1113	A-8121	A-4000	TBO-1	Vert. Block Osc. Trans.
T4	370Ω	SEC. 1	S-15709				Hor. Output Trans.
	Tap @ 85Ω	4.8Ω Tap @ .35Ω					
		SEC. 2					
		0Ω					
T5	590Ω	14Ω	95-1112	A-3035 ⑤	A-8115 ⑤	TSO-2 ⑤	Vert. Output Trans.
T6A	14Ω		95-1110	DY-1	MD-1		Hor. Deflection Coil
B	60Ω						Vert. Deflection Coil

⑤ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	7KΩ	3.8Ω	590Ω	1Ω	95-1167	A-3849	A-2902	RO-13	

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	3.8Ω	49-673 ③	ST-803 MOD. P525-V	52A1	③ Used in table models.
B	PM		49-670 ④			④ Used in console models.
	CONE DIA.	V. C. DIA.				
SP2A	5"	9/16"	208-673			
B			208-670			

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.097A	194Ω	3.5 Henries	95-1170	C-1710 ⑤	C-2993 ⑤	R-885 ⑤	⑤ Drill new mounting holes.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	NOTES
L2	Ant. Input					
L3	Mixer Plate			S-15064		
L4	High Freq. Osc.	0Ω		S-15043		
L5	Low Freq. Osc.	0Ω		S-15066		
L6	Fil. Choke			S-15065		
L7	RF Choke			S-15128		
L8	Sound Trap			S-16031		
L9	Adjacent Channel Sound Trap			S-15727		
L10	1st Video IF	.2Ω		S-15049		
L11	2nd Video IF	.2Ω		S-15051		
L12	Adjacent Channel Sound Trap	0Ω		S-15053		
L13	3rd Video IF	.2Ω		S-15052		
L14	Fil. Choke	.2Ω		S-15060		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L15	4th Video IF Primary	.2Ω		S-15055		
L16	4th Video IF Secondary	.2Ω		S-16009		
L17	Peaking	6.5Ω		S-16010		
L18	Peaking	8Ω		S-16011		
L19	Peaking	8Ω		S-16011		
L20	4.5MC Trap			S-16624		Not used in all models.
L21	Peaking	10Ω		S-16015		
L22	Peaking	13Ω		S-16014		
L23	Peaking	10Ω		S-16015		
L24	Sound IF	4Ω		S-16012		Tapped at 3Ω
L25	Quadrature Coil	4.5Ω		S-16013		
L26A	Horiz. Phase Coil	70Ω		S-15041		
B	Horiz. Freq. Coil	60Ω				
L27	Width Cont.	.2Ω		S-16049		
L28	Fil. Choke	0Ω				35 turns on 1/4" air core form.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.25	Blue *	100-36		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2A	RF Tuner	S-15940	
B	RF Tuner	S-15020	
M3	Switch	85-462	Dial Lamp
M4	Switch	85-470	Picture Size
M5	Fuse	136-16	
M6A	Channel Strip Assy.	S-15952	Channel #2
		S-15953	Channel #3
		S-15954	Channel #4
		S-15955	Channel #5
		S-15956	Channel #6 — Used in RF tuner S-15940
		S-15957	Channel #7
		S-15958	Channel #8
		S-15959	Channel #9
		S-15960	Channel #10
		S-15961	Channel #11
		S-15962	Channel #12
		S-15963	Channel #13
B	Channel Strip Assy.	S-15029	Channel #2
		S-15030	Channel #3
		S-15031	Channel #4
		S-15032	Channel #5
		S-15033	Channel #6 — Used in RF tuner S-15020
		S-15034	Channel #7
		S-15035	Channel #8
		S-15036	Channel #9
		S-15037	Channel #10
		S-15038	Channel #11
		S-15039	Channel #12
		S-15040	Channel #13
M7	Ion Trap	S-16025	Alt. Part #S-16200
M8	Focus & Centering Assy.	S-16020	Permanent Magnet Type
	Control Cover	24-479	Outer (R. H.) Model G2420R, G2454R
	Control Cover	24-480	Outer (L. H.) Model G2420R, G2454R
	Cover & Clip Assy.	S-15363	(R. H.) Models G2420R, G2454R
	Cover & Clip Assy.	S-15364	(L. H.) Models G2420R, G2454R
	Knob	46-813	Dial Light Switch
	Indicator Prism	171-9	
	Safety Glass	192-122	
	Knob	46-771	Vert. Hold, Contrast, Brightness, Fine Tuning
	Knob	46-773	Channel Selector — Models G2420R, G2454R
	Knob	46-814	Volume Control & On-Off Switch — Models G2420R, G2454R
	Knob	46-818	Picture Size Switch — Models G2420R, G2454R
	Knob	46-752	Vert. Hold, Contrast, Brightness, Fine Tuning
	Knob	46-761	Channel Selector — Model G2420E
	Knob	46-815	Volume Control & On-Off Switch — Model G2420E
	Knob	46-817	Picture Size Switch — Model G2420E
	Trimmer	22-1882	Video Coupling Trimmer (1-9MMF)

FOCUS AND CENTERING ADJUSTMENT

The focus adjustment consists of a brass ring which is screwed into the rear of the focus magnet. Focusing is accomplished by turning this ring in or out to vary the density of the magnetic field within the core of the focus magnet. Centering of the raster is accomplished by loosening the lock nut, at the top of the focus magnet mounting plate, and moving the centering lever vertically or horizontally as required. If the picture cannot be centered with the lever, it may be necessary to adjust the focus assembly positioning screws.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENT

a) Turn the set on and tune in a TV station, preferably a test pattern.

b) Turn the horizontal hold control to the center of its range. Set the contrast and brightness controls to approximately normal position. Set the picture size switch to normal (raster the smallest vertically).

c) Adjust the horizontal frequency slug (B1) until the picture remains in sync over most of the range of the horizontal hold control, (the picture may remain in sync over the entire hold control range).

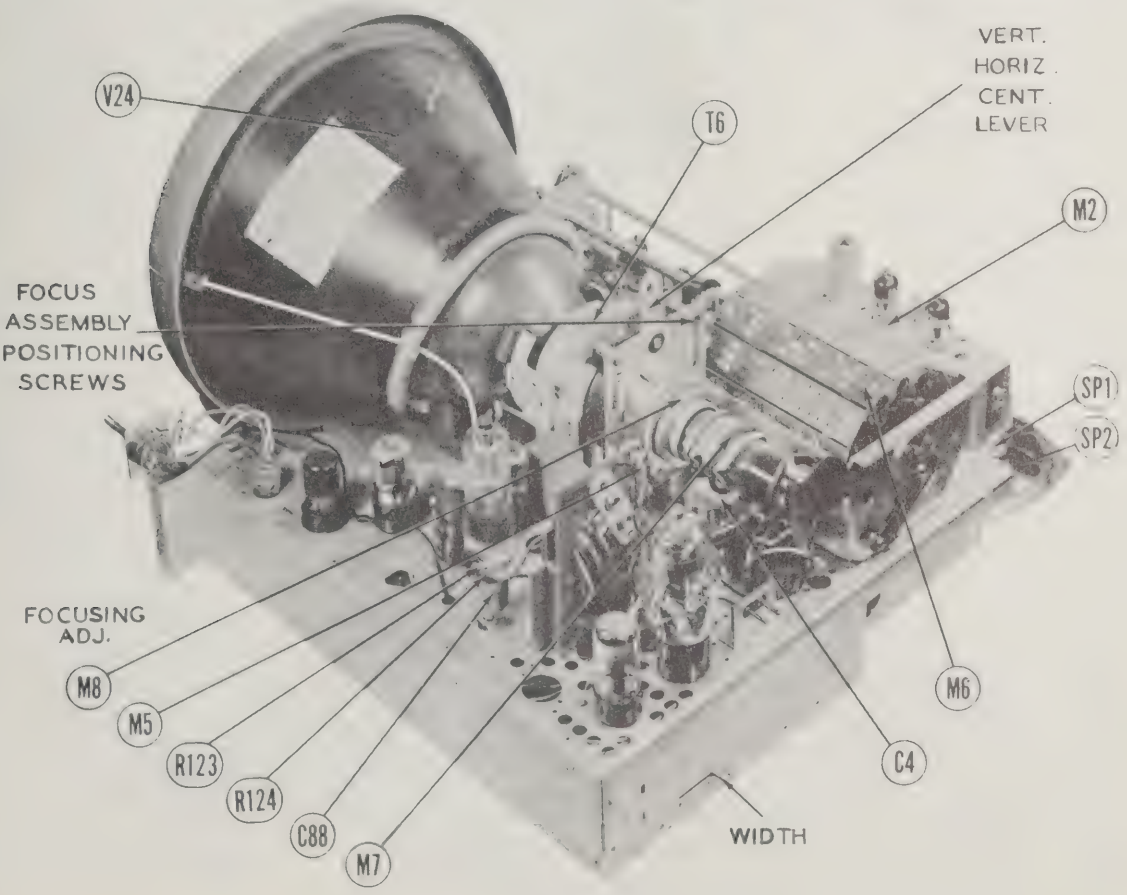
d) Connect a VTVM between test jacks "H" and "I", and adjust B1 until rotation of the horizontal hold control to either end will produce equal voltage swings of opposite polarity.

e) Set the horizontal hold control to the zero position between the positive and negative readings on the VTVM. Adjust the width lever until both sides of the picture are visible. Decrease the contrast and increase the brightness until the normally blanked edges of the raster are visable.

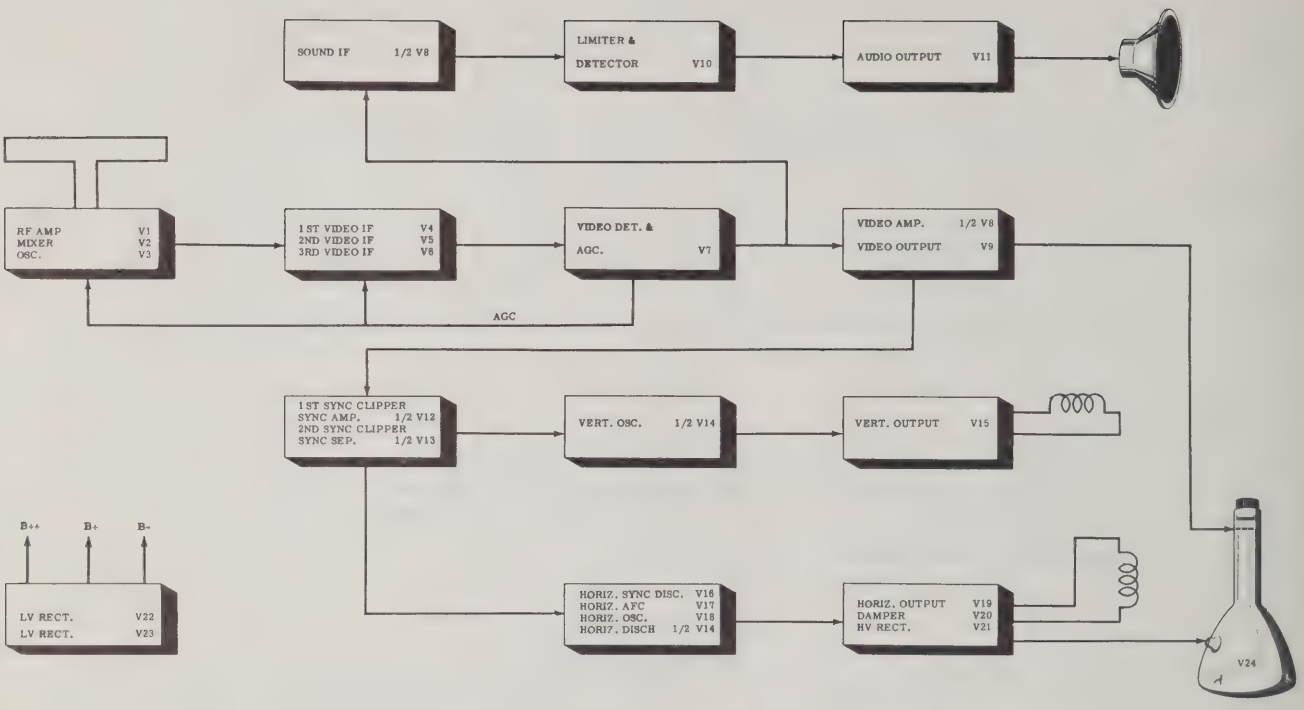
f) Adjust the horizontal phase slug (B2) until the picture is centered on the raster, and approximately 3/8 inch of raster extends beyond each side of the picture. Recheck the zero reading on the VTVM, and if necessary repeat step "d".

AGC ADJUSTMENT

While receiving a local TV station, adjust the AGC control (R9) to read between -1 and -1.5 volts on a VTVM connected between test point "S" and chassis.

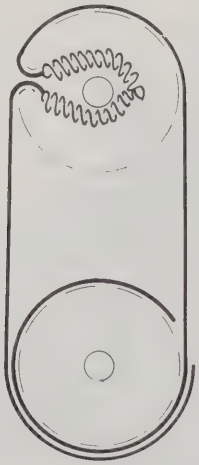


CHASSIS-TOP VIEW



BLOCK DIAGRAM

FINE TUNING DRIVE CORD STRINGING



DISASSEMBLY INSTRUCTIONS

1. Remove two large and four small push-on type control knobs..
2. Remove four screws holding rear cover. Remove cover.
3. Remove power supply from TV chassis.
4. Remove speaker jacks from speaker.
5. Remove 1/4" hex head bolt holding speaker ground wire to TV chassis.
6. Remove two screws from small wooden block holding power chassis. Remove block and slide out power chassis.
7. Remove four 3/8" hex head bolts holding TV chassis. Remove chassis.
8. Remove two 5/16" hex nuts holding speaker. Re move speaker.